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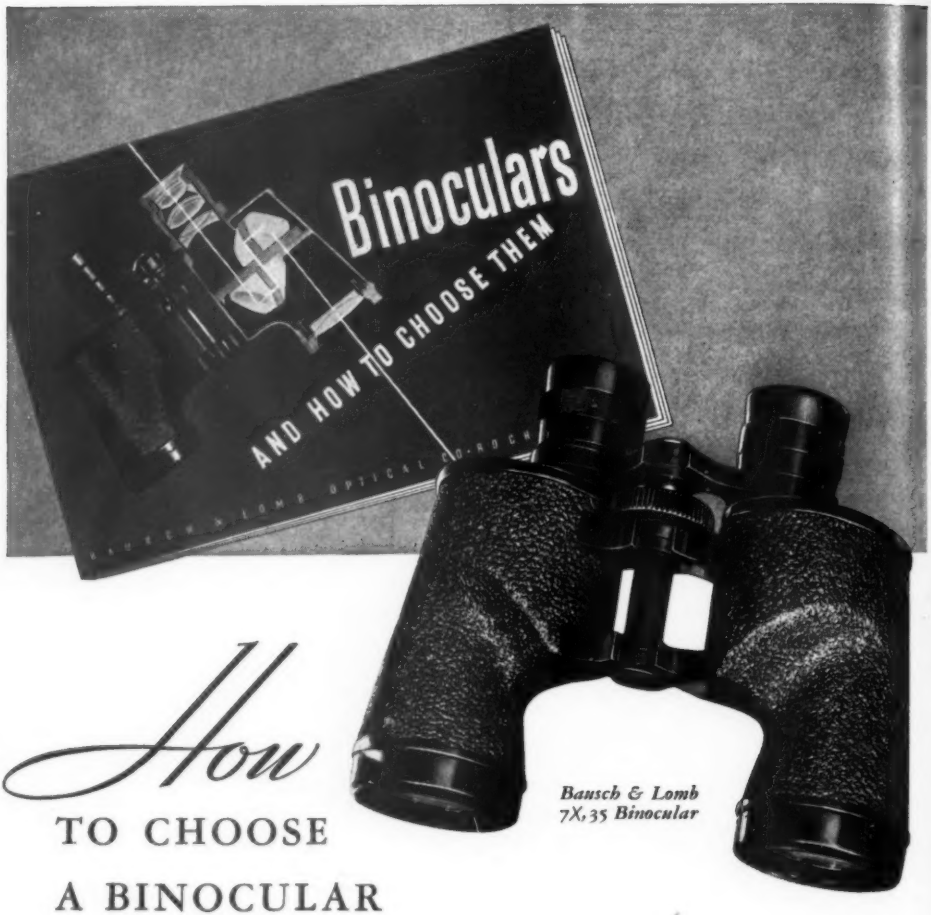

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A BIMONTHLY MAGAZINE DEVOTED TO THE PROTECTION AND PRESERVATION OF OUR NATIVE WILDLIFE

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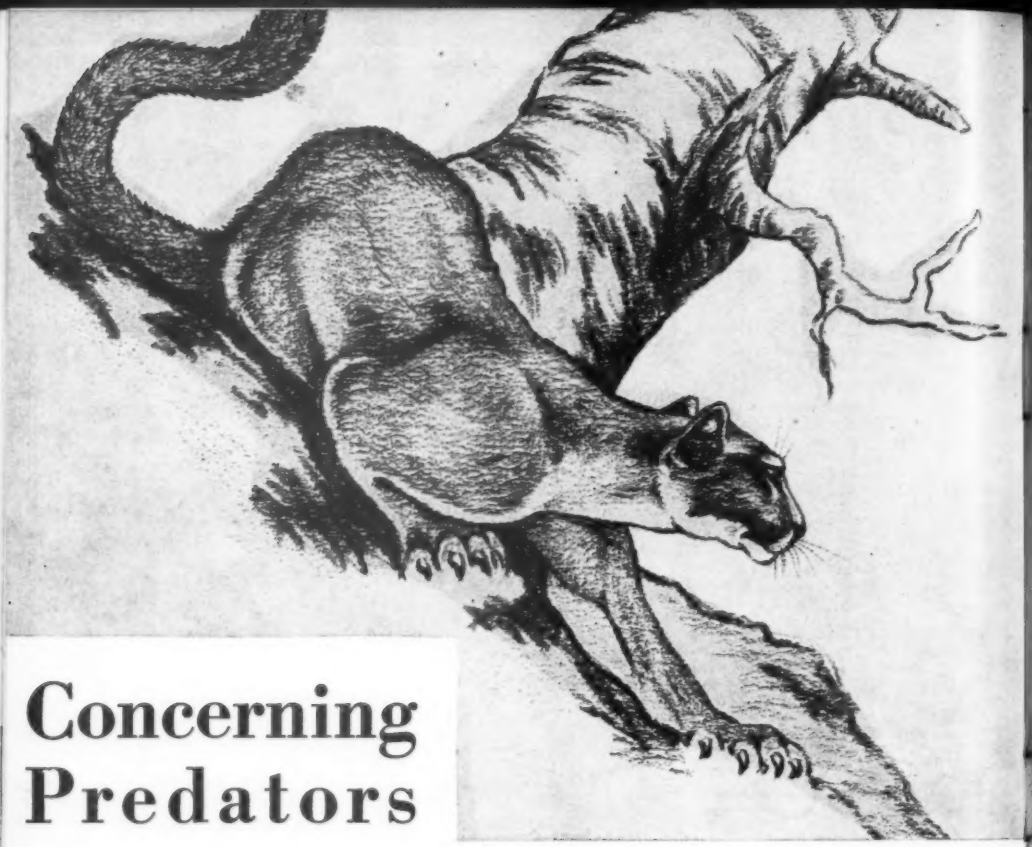


Concerning Predators

By Dave Cook, illustrated by Walter J. Schoonmaker

ONE of the most complex and oft-times baffling wildlife problems is that of the predator and what to do about him. Under this term we group those creatures that live by preying upon others, especially those others which are of economic or sentimental importance to men. While they do commit certain acts with which they have been charged, predators are not responsible for anything like the depredations so often laid at their door and the true import of some of the seemingly undesirable things they do is seldom understood, even less often appreciated. If some one act be hurtful to human interests, even to the interests of only a few, the creature is summarily labeled a predator. That automatically puts it in the black list and thereafter every man's hand is against it.

It is not easy to understand this uncompromising hostility. Some of it may stem from a long way back in human experience. Both in cunning and in physical prowess, the bigger cats and the wolves were more than a match for the primitive hunter and his crude weapons. Man could not stand up against them, so he both feared and hated them. Toward the lesser predators, his reaction may have been that of envy, because, as hunters, they excelled him in stealth, in skill and in success.

With civilized man the perspective is different. Although well able to defend himself and his household against direct assault, he cannot

wholly prevent the raiding of his scattered flocks and herds by predators large and small. He is angered by his losses—and anger is not conducive to unbiased thinking. His attitude seems to be that, if he could be entirely rid of the miscreant who occasionally steals a chicken, kills a lamb or robs a bird's nest, all would be well. Ultimate consequences receive scant consideration.

Least understandable of all is the attitude of the modern city-dweller. Even though he may never have seen a live, wild predator, yet he has very definite ideas about them. Fairy stories about the big bad wolf and the sly fox, as well as the more modern but no less fanciful nature "thrillers," are universally known. It is no laughing matter that the attitude toward predators of half our population is conditioned by such fictitious stuff. On the basis of fables, incomplete facts and an appalling lack of understanding of the fundamental ecology of the problem, predators are summarily condemned.

But it is not that simple. The balance of nature is a delicate and transitory one, compounded of a myriad of opposing pulls. At best, it is in unstable equilibrium, from which it is easily toppled. Man, in his efforts to rebuild the earth in a pattern which seems more productive and more suitable for him, has brought about some vast changes. He has converted forest to grassland and to plowland. He has ditched swamps and dried up marshes. He has brought in a whole new fauna—his domestic animals. And when these come into conflict with the native species, he attempts to cure the trouble by eliminating the latter, sometimes with too-complete success.

However, the void left by the removal of one species may be filled by another which is even harder to control, as when the gray wolf is replaced by the less bold but more prolific coyote. Or, the removal may set up a chain reaction of startling proportions and unpredictable course. Poison campaigns against the coyote have taken heavy toll among the gray and kit foxes, thus removing two natural controls on jack-rabbits and smaller rodents. Freed from control, they can multiply until they literally eat up all the grass. Reduction in grass favors annual weeds and these favor the increase of crickets and grasshoppers, who still further deplete the range. The process of elimination becomes an unending one.

The first white men who landed on

If we had more big predators there might be fewer starved deer.

this continent brought with them from Europe certain notions about wildlife and particularly about what animals were "bad." Early efforts were directed against the wolf and the panther and were so successful that these creatures were killed off as fast as agricultural settlement advanced. The panther depended heavily on the deer, the wolf on deer, elk or bison. The reduction of their natural prey as well as the guns, traps and poison of the hunter, has brought these, our two largest predators, close to the vanishing point. For them, the problem now is more one of preservation than of control, lest they be exterminated! As the big predators were cleaned out, their places were only in part taken by lesser species: the bobcat, the coyote, the foxes, the weasels and perhaps the skunks. These creatures are the predator problem of today.

If we are to satisfactorily solve that problem, we must find answers to several vital questions. Nor will categorical answers do, for what is true here today is not necessarily true there tomorrow. Each situation is different and each must be evaluated on its own merits. How well-founded are the charges? Are they based on sound findings by competent observers? How important is the predation to the prey? Is it the capital stock, or only the surplus that is being removed? Are the losses real and important, or is it merely that those who fancy themselves wronged are able to make themselves heard? What is the ecological significance of predation? Perhaps the meat-eater is simply exercising his function of keeping grass-eating populations in biological balance. Will the elimination of some predator solve more ecological problems than it engenders? Until we can supply sound answers we cannot expect adequate solutions to the problem of predation and what to do about it.

What a predator catches to satisfy its hunger is the cause of most of the complaint. Those who consider themselves most directly affected—the farmer, the stock raiser, the sportsman and the natureman—have some very positive ideas on the subject. Have they not seen chickens stolen, or lost stock, or found the coverts depleted, or had a dooryard nest rifled? And were not predators responsible?

It is difficult to convince these people that the *obvious* answer is not necessarily the *correct* one. The farmer finds that his hen house has been raided, birds destroyed. A weasel is seen. It will take a lot of educating to show him that the weasel may not have been the culprit, but might have been attracted by the rats that actually did the damage. The rancher finds a calf, obviously fed upon by coyotes. How can we convince him that the calf might have been a weakling, foredoomed to an early death? The sportsman finds the game and the birds gone from his favorite covert. Foxes are abundant. Can we satisfy him that this is not a cause-and-effect situation, that the decline in game is due to other, more subtle causes?

The bird watcher finds a ground nest rifled, perhaps by a skunk. Will he understand that, while regrettable, the loss may be ecologically unimportant? Until we can convince these

people that there is more to the predation problem than meets the casual eye, we must expect public agitation for the control of predators every time one of them becomes unusually abundant, or when one of the prey species declines.

Within their ability to catch and overcome, the hunters eat those things which are most readily available and which can be secured with the least expenditure of energy. It is almost always easier to get a meal from wild fruit or from such abundant small fry as insects and mice than from the less numerous and more wary game birds and mammals. Therefore, our first consideration must be to discover how much of any predator's prey comes from species desired by man, how much from less "important" items.

Fortunately, the scientific study of predator food habits has received considerable attention. We have accumulated a sizable body of facts about what things these creatures will eat, some facts about how much they eat, and even a few facts about why they eat what they do. The effect of these findings has been to de-glamorize the predator business. No longer is he a terrible robber baron, levying tribute on all the lesser creatures in his domain. He turns out to be just an ordinary fellow trying to get along in a busy world. Occasionally he engineers a spectacular foray, gets his name in the papers. But mostly he plods along, getting his meals where he can and dreaming, mostly without avail, of that diet of red meat with which so many people mistakenly credit him.

If a bobcat chance upon a winter concentration and the weather be right for stalking, it may kill one or even several deer. But deer bunch up only at certain seasons and in certain places. Windy weather, apparently the most suitable for a stealthy and successful approach, is of infrequent occurence. These occasional forays receive wide public notice. But what of the rest of the year, when vension is not to be had? Then, the diet of the bobcat comprises such unromantic items as mice, varying hares, rabbits and small birds.

The story of the coyote is much the same. It can and sometimes does pull down deer, cattle and sheep, but, even among these, the victims are apt to be the young, the sick, the old—or those already dead from other causes. A recent official report on the food habits of the coyote shows that domestic stock amounted to 13 per cent of the diet. However, hares and rabbits make up 33 per cent and other rodents 18 per cent, so that these smaller forms outweighed domestic stock almost four to one.

The fox inhabits densely-populated sections and so does his hunting in a much more complex environment, quite literally in someone's back yard. From time immemorial, he has enjoyed a dubious fame as a master hand at chicken stealing, game-bird

Predation by foxes helps keep cottontail numbers in check.

poaching and wildlife destruction. Surely, there must be plenty of substance behind so many accusations! Domestic fowls that are maintained on open range in territory where foxes are numerous are an open invitation to predation. It should surprise no one if some are taken, especially in spring, when the birds are small and unwary and when the foxes have cubs to feed. Foxes do catch both pheasants and grouse but only when these are abundant enough to be easy picking.

But the bulk of the fox diet is of lesser things. From strawberry time through the flush season of wild fruit, until the snow covers the last fallen apple, fruit is important. Seasonally, insects may be taken in considerable numbers. And there is always the myriad of small birds, small mammals, snakes and frogs on which to forage. Whatever may occasionally be taken of poultry and game, the mainstays of fox diet are mice, cottontails and wild fruit.

The weasel is a streamlined little fellow whose occasional forays on the chicken house have given him a bad name. But not all the accusations are well founded, for the weasel is too often convicted on purely circumstantial evidence. Unbiased study of his food indicates that he is primarily a mouser and a ratter, a task for which his slender build well fits him. Were it not for his unceasing activities in rodent control, mouse plagues might be even worse than they are. Although the skunk occasionally blunders into the nest of some ground bird, he is not a very aggressive predator. Any chicken house that he can burglarize must be a flimsy structure indeed. His normal diet is of mice and insects and fruit, to all of which he should be more than welcome.

How does predation affect the species preyed upon? This is a difficult question, and the correct answer is not always a popular one. Generally, predation is not the primary cause for the fall of wildlife populations. Rather, the abundance of predators *follows* that of their chief prey. A classic case is that of the lynx and the hare. As the hares increase, so do the lynxes. When the hares suddenly decrease—from causes other than predation—the lynxes are left without their stable food and, after a year or two, their numbers decline, too. Perhaps no small mammal is so widespread or so abundant as the field mouse. Every flesh-eater, from the wolf to the weasel, considers it fair game and can be counted upon to foregather wherever mice are abundant. The field mouse is a strongly cyclic species. Its numbers fluctuate over a four-year period and almost without regard to predator pressure. Were the predators able to exercise any very substantial control, the field mouse, with its host of enemies, could never build up to the startling abundance that marks its cyclic peaks.

The reason for the decline of any species must be looked for in fundamental, widespread and subtle environmental factors such as changes in plant associations, in agricultural practices or in weather. The ivory-billed woodpecker has been brought to the verge of extinction, not by predation, but apparently by the cutting of the old-growth bottomland hardwood timber on which it so definitely depends for a home. During Colonial times, quail ranged much farther north than they do now. Their decline was not due primarily to predation, but to the cessation of small-grain raising that followed the opening of the West.

In New York, pheasant numbers have been declining for some years; at the same time, foxes have become increasingly abundant. There were many who saw in this a simple cause-and-effect relationship and there was,

and still is, considerable agitation for some public effort to reduce the fox population. However, the State's research men studied the problem, demonstrated that the number of pheasants correlated well with the character of the weather during the nesting season, little if at all with the number of foxes. Dry springs were favorable, wet ones unfavorable, without much regard to the numerous foxes. It is altogether too easy to blame the predators for the things that they do not—yes, CAN NOT—do. They are not nearly so skillful or so potent as we are sometimes inclined to believe.

The reason for the rise or fall of any form of wildlife must be looked for in its response to the whole of its environment, and not to any single factor. The predator is only one of several agents; certainly among the most conspicuous and most spectacular but also among the least potent. There is no historical record of any important wildlife species having been brought low through the activity of predators alone. There are plenty of records of species that have become numerous in spite of predation. Those that could not withstand predator pressure perished long ago. Those that survived did so because they were more than a match for the many hazards of their existence.

Consider also some of the biological facts concerning the hunted species and what has happened when the hunters were eliminated. Most wild animals have a relatively short life span. Deer may live a dozen years, the hare, the grouse and the pheasant three or four. But the field mouse is old at fifteen months. It is evident that population turn-over is rapid, without regard to losses from predation. To compensate for these necessarily heavy losses, the reproductive rate is high. A well-established deer herd can double its numbers each year. The pheasant that nests in the hedgerow may lay ten or a dozen eggs, bring up seven or eight young. The robin from the dooryard can raise three broods of four young each. Unquestioned championship goes to the field mouse whose litters of five, more or less, follow one another at frequent intervals from early spring to late autumn. Such rapid reproduction can be kept in bounds only by equally rapid depletion. The maintenance of the species requires only that the brood stock at the beginning of the season be as big as in the preceding year. A pair of robins arrive from the South in April. They bring off a dozen young which, with the old birds, makes fourteen. If there were no mortality, we should soon be overrun with robins. Predation helps keep all these populations within bounds.

There is considerable divergence of opinion as to where predation is harmful and where it may be helpful. When practiced on rats and mice, it is quite generally approved. The gunner considers the cottontail a valuable item, well worth protection; the orchardist views bunny with a definitely hostile eye. The bird student is glad

Were it not for the weasel, mouse plagues might be worse than they are.

to have the robin in his yard; not so the man who raises cherries. Though desiring to maintain ample herds, the forester and the ecologist consider a reasonable amount of predation on deer as insurance against overpopulation and the consequent destruction of the range. In passing judgment, we must understand that, in certain places and at certain times, even the most preferred wildlife may be out of place.

The biological function of the predator is to keep some sort of continuous check on those numerous forms that depend on plants for food. Because they turn readily to any prey that may be abundant and easy to secure, they are able to exercise at least a measure of restraint on the unlimited increase of the eaters of grass and grain. When they fail, the whole ecological set-up is thrown off balance. Man's efforts to prevent predation on certain specific creatures—chiefly his own domestic stock—has usually resulted in the lessening of these biological controls. Often, the result has been losses from other sources which were even more grievous and less controllable than had been the initial loss from predators.

Consider the case of the Kaibab deer herd, perhaps the best-documented biological calamity on record. The original controls were from limited hunting by the Navahos, predation by wolves and mountain lions. In order to build up the herd to permit increased hunting, predators were "controlled" to the point of extermination. Hunting for sport proved inadequate, and the deer soon overbrowsed and depleted their range. Mass starvation overtook the herd and its size fell sharply. Today, the depleted range cannot support even as big a population as it did before predator control began.

Losses to coyotes have been estimated at three per cent of the stock on range. Vigorous predator control campaigns have been prosecuted with intent to save that three per cent for the rancher. But the ecologists have demonstrated that, where coyotes are unduly reduced, a rapid increase in all rodents and especially the jackrabbits, may be expected. When numerous, these mammals will consume forage worth far more than the stock lost to the coyotes.

In the Northeast, efforts have been directed toward continued reduction of bobcats because of their predation on deer. Forty years ago, when deer were scarce, this made at least some sense. But now, in some of the states that have well-established and flourishing herds with a tendency to expand beyond the capacity of the range to feed them, there is a growing feeling that a few more bobcats might help maintain the balance, especially in the remote areas where the hunting pressure does not suffice.

The flesh-eaters are the first line of defense against the tendency of the eaters of plants to increase beyond the capacity of the range to properly sustain them. Some of their acts appear to be detrimental to human interest, whether sentimental or economic. But the function of the predator is vital and one which, so far, has proved to be beyond our capacity to handle through human intervention. Either the predators perform their proper task or the job goes undone. And if they fail, the consequences may be far reaching and the cure may prove to be worse than the condition it was intended to remedy.

Let us cherish the predator as one especially adapted to perform certain essential regulatory functions, without whom the biological balance would be even more awry than it now is. His presence is often a considerable annoyance. But his absence may result in something close to tragedy.

Edward A. Hill

The Placing of a Leaf

The broad-winged hawk garnishes her eggs with a green leaf—symbol of the ancient law of instinct that is part of the poetry of nature.

By Edward A. Hill

LIKE a wind harp in a late May breeze, the leaves of the chestnut oak trembled; but their music was only a brushing sound, the lullaby of the forest.

Sunlight, dappled by the leaves, shimmered up and down the trunk and across the limbs, revealing ever so briefly the great brown hawk, where she cradled her eggs in their nest. Swaying as the tree swayed, moving as the sun moved, she was part of the woods and the wind, brown as the bark, invisibly lost in the endless glimmer and blend of color that men now so knowingly call camouflage.

At high noon the shadows disappeared and she brooded in hot sunlight. Suddenly her muscles tensed and the strong yellow legs catapulted her into the air; long, leisurely wing strokes blowing up the leaves with a breeze of their own. Circling, she fanned out her tail until three white bars across it identified her kind. She was a broad-wing, one of that majestic family of gliders that circle to the sun till they are lost to sight.

Daily, she reveled in periodic relief from her brooding, and day and night, hour by hour, sat silently in the nest. It was not a restful brooding, but a never-ending vigil. With almost imperceptible head movements, her wild brown eyes flashed their constant awareness of every sight and sound, for that is one of the first laws of nature—alertness.

To eat and not be eaten, is no simple thing. Life dwells in many

forms and must be fed . . . in flesh and bone, in houses of chitin and mother of pearl, in the great green laboratory of a leaf. To each must come the strength of the sun, direct or circuitous, by green blood or red, by sap, or tooth and claw. So by thorn, spine or poison, by fang, hoof and horn; each form strives to protect the life entrusted to it. So did the broad-winged hawk, and knowing full well that flight is often better than fury, was instantly ready to leave when danger showed its head.

Days passed, warming, sunning, turning the eggs. Always they were garnished with something green . . . a twig of oak, some green-leaved plant. For moisture perhaps; perhaps the reason is lost . . . lost in the staggering ancientry of instinct, more certain, sure, than knowledge that is known.

Instinct may be final truth. The findings of a million years of trial and error . . . boiled down to the placing of a leaf; so exactly, so importantly, so eternally true that it cannot be left to choice. So was the building of that great nest . . . not a privilege to be enjoyed, but a creation of the infinite, shaped, lined and woven by the architect of mountains, not by the broad-winged hawks. Yet they, under sealed orders had selected the site, carried the sticks and bark and were not surprised to find when finished that it was just suited to their needs.

Never had they seen eggs, yet they seemed to expect the gray-white ones, mottled with chocolate brown and to realize the potentialities involved. Memory gave them no inkling of their own early life, yet the fuzzy white creatures that broke through the shells one June afternoon, looked just as they should in the eyes of a hawk.

Downy they were, with flat, triangular heads and their whiteness was tinged with a pink so soft that it almost wasn't there. Only in certain light did it shine like an aura about them . . . delicate, misty, beautiful.

But to the parents they were two mouths to feed. Mother stayed close to the nest in the first days, while the darker male rode down the mountain on the wind, flattened out over the meadow where the fat little mice were and brought them home to her. Meat had to be torn into little pieces and served. Held by the talons, ripped with the beak, it was transferred morsel by morsel from the curved mandibles of the mother to the black and yellow bills of the young. In a few days it became quite a task and both parents joined in the work.

Broad-wings are solitary hawks and silent. One might swing above the meadow while the other perched in a tree. Seemingly he might be asleep, motionless for a long, long time, but when his prey stirred the grass below him he would drop like a stone and in an instant food was on its way to the nest. Meadow mice quite often, but many times a snake, would dangle from his talons as he pulled into the sky. If mother were at the nest, he would land on its edge and in a flash give the food to her. So swiftly was the transfer made that only the motion of wing-blown leaves told of the silent shadow that had come and gone.

If she were away from the nest he would take possession and stand there making a soft crying sound, very weak for so large a bird, until from nowhere in particular came a returning whine, so high pitched that it defied direction and could not be traced. Of a sudden there would be a quick interchange of bodies, a crossing in the air and the male would be gone down a leafy lane while his mate stood in the nest, preparing to serve the food he had dropped there. If a large snake, she would comb the flesh from the vertebra; if a small one, she would teach the young to eat it as it was. Like tossing down a pill, the larger of

the two would contrive to swallow it whole, inch by inch, with jerking head movements like a puppet saying "yes," until even the tip of the tail had disappeared.

On an everyday, all-day diet of snakes and frogs, of grasshoppers and mice, of occasional birds and squirrels, the two young broad-wings grew. Their white down was replaced with feathers until all but their heads were brown. The head remained fuzzy-white and they looked almost like little eagles. Like eagles too, they pranced in the nest, flattened it out like a gymnasium floor and stretched and tried their wings.

One day in July the elder one hopped to a nearby limb, then back to the nest again . . . he could fly! It was only a matter of a few days then before he discovered that food no longer arrived so regularly; the starving out process had begun. A solid thud and a shaking branch would announce that mother had landed in a nearby tree and with a dangling morsel too. It meant come and get it or go hungry. There was much hesitancy at first, then a confident lift of untried wings, ending in precarious balancing at the edge of the nest, afraid. Mother moved nearer. He launched . . . success! He was fed on a branch and, within a week, baby followed suit.

Foraging then, day after day, learning to hunt and to kill. Eyes that were telescopic learned the tell-tale movements of twitching leaves and flashed with a fire kindled ages and ages ago. Talons became cruel swords, but of swift mercy, dealing out death in the grass. Like a roving band the four of them flew through the trees, pirates perhaps, but there was no loot other than food, no hatred of other life, no lusting for blood . . . only the calm carrying-out of nature's plan. The laws of life were implicitly obeyed because they were written in the obscurity of impulse, a part of the tensing of muscles and the rhythm of broad-barred wings.

It was written, too, that the young should be bereft, deserted by their parents as the summer wore on. Emotion played no part though, for these were hawks. No paralyzing fear of facing all infinity alone . . . fear is born of knowledge and they had none, and need of none . . . instinct was their guide. Like an omniscient god, it pointed them across a fertile valley waving its rows of corn. How could they know of the long low range of mountains beyond? How could they know it was September? They need not know. They need only feel a great wave of wind rise under them, veering from the sides of the great blue ridge; they need only ride it like a breaker in that sea, the sky . . . southward.

No memory of their parents stirred as they flanked and followed thousands of their kind. Like an armada of the Almighty, the great broad-wing flight cleaved through the ancient skyway; shawls of shadow from the leaning hills fled into distance below them until there was land no more.

They flew between two blue circles, the sky and the sea, whose faint rim of meeting gave no clue of the beyond, nor could they guess. It was not yet revealed, even to those who had been there before, that in half a thousand miles there would rise like a mirage from the mist, a land of palms and plenty.

* * *

In the dry leaves of the chestnut oak, there was a rustling sound now, and most of them had fallen. Its topmost crotch held a sagging mass of shapeless twigs and sticks, decaying, disintegrating. The architect of mountains was already destroying the platform he had built, for it had served its purpose . . . a jumping off place for life.

GABRIELSON

By Louis J. Halle, Jr.

THE announcement that Ira Noel Gabrielson, at the age of fifty-six, is retiring as Director of the United States Fish and Wildlife Service has been read with deep regret by his host of friends and admirers, a regret that is relieved only by the auspicious announcement, issued simultaneously, that he will be succeeded by a man who has already demonstrated his vigor, his courage, and his grasp of conservation problems, Albert M. Day. Although Gabrielson retires, the direction that he has given to the movement for the conservation of wildlife may be expected to continue as a decisive influence in the years to come. It is impossible to believe, however, that he will retire entirely from his fruitful activity to bring about a more intelligent appreciation and management of the nation's renewable resources. His life and his life-work have always been so intimately associated that while the one continues the other will surely be carried on. There are indications, for one thing, that more books and articles may now be forthcoming from his always prolific pen.

When I gathered the material for this sketch of Gabrielson, and when I wrote it, his plan to retire was not yet known. It is presented, now, as a particularly timely appreciation of an abundantly productive career devoted to public service.

His friends all know him as

"Gabe." He is such a tower of a man that, when I met him for dinner the other evening, I was surprised to observe that in actuality he is not tall. That is just the impression he gives. Although he is excessively heavy, you would not call him a fat man. I have met other men who have a similarly impressive physical presence, but I would not need the fingers of both hands to count them. He is physically monumental and relaxed, with deep, clear voice and easy manner. Behind his ease, obviously, is a reserve of power and confidence that gives weight to everything he says. You would not want to get in this man's way. At the same time, you could hardly help trusting him entirely at first sight. He has your confidence as soon as you shake hands with him. This comes, in part, from the forthrightness, friendliness and humor that are written in the lines of his face. Obviously, he is an honest man, a man who trusts himself, and a man without fear. He will meet any problem in his stride, head on, and see it through. It is hard to believe that any difficulty would give him pause, that any situation would faze him, or that any amount of work could exhaust him. When such a man is on the bridge of a ship, the passengers sleep soundly.

Gabrielson is a country boy from Iowa who rose by an inevitable progression to be Director of the Fish and Wildlife Service (until a few years back, the Biological Survey and Bureau of Fisheries). He is still the countryman, in his down-to-earth conversation, and also in the loose, easy way he wears his clothes. I am sure it would never occur to him to adjust his necktie in front of a mirror, even though on his way to the Queen's Garden Party. He will never be asked to pose for a hat advertisement.

Mrs. Gabrielson, a quiet gray-haired lady, had dinner with us that evening, when I met him to get certain material for this article. If she has anything to complain of, albeit with good humor, it is that for the past thirty-three years she has been married to the Biological Survey. Wildlife conservation has not been her husband's job but his life, and he has led it with gusto. Ask him any question at all about himself and, while he will reply directly to the point, his reply will also lead by the shortest road to an account of the work in which he has been engaged, its problems, and the methods developed by the Service to meet them. He is a gifted talker, expressing himself clearly, smoothly and with conviction; he obviously likes to talk, and he has no affected reticence or mock modesty about himself; but he is simply more interested in the problems of wildlife management than in anything else, himself included. Perhaps it would be more accurate to say that he does not distinguish himself from his life-work. Another aspect of Mrs. Gabrielson's

Dr. Gabrielson at Bogoslof Island, Alaska. Murre colony in background.

complaint is that, for thirty-three years, he has been away from home in the field one quarter to one half the time.

Gabrielson has made use of his traveling time for the large volume of writing that he has produced: articles, speeches and books on wildlife management and conservation. His method has been to keep card-files containing the latest information and opinion on the problems in the field. When traveling, he has carried such cards as he needed with him, and done his writing long-hand on planes and trains, or aboard ships.

To my question when and how he had first become interested in nature he replied that he could not remember a time when he hadn't been. As a boy in Iowa, where his father had traded his interest in a country hardware store for a farm, he had kept a garden of wild flowers and, with the other Huck Finns and Tom Sawyers of the neighborhood (and the present Mrs. Gabrielson, then in pigtails), had explored the local river-banks for birds' nests. It never occurred to him in those days that birds might be the subject of a science or that nature was studied as a profession by which men made their living. He was as surprised, when he did find that out, as he would have been if told that some men devoted their professional lives to playing blind man's buff.

At Morningside College, when he was offered the choice between chemistry and biology, he elected chemistry simply because someone told him that he would be required to draw pictures in biology. His mother, however, had given him a cheap camera with which he had photographed birds' nests, and his pictures fell into the hands of the biology professor. Young Gabrielson was called in and asked what he knew about the birds that built the nests. He didn't know their names, but he knew pretty much everything else about them that a boy could observe in the field. He knew their habits and what they looked like. With the discovery that there was a science of living nature, he quickly abandoned his earlier choice of chemistry. After graduation, in 1912, and three years of teaching biology in a high school, he joined the Biological Survey as an assistant in economic ornithology. Devoting himself in succession to food-habits research, rodent control, game management, and wildlife research, most of the time in the Western states, he became Director of the Survey in 1935. Even after he had assumed the vast responsibilities of the entire Fish and Wildlife Service, he continued to do a large part of his work in the field, where he came to grips with problems at first hand, leaving his Washington swivel-chair empty. He has always been the last man to deal with conservation and wildlife management as abstract sciences or games to be played on paper.

I thought that anyone who had been associated with the conservation effort in the United States for the past thirty years must have been in some pretty rough scraps, and I asked him about this. "I don't get into fights," he said. "That's never been my way." What he meant, it turned out, was simply that he doesn't engage in personal feuds. He is, patently, too magnanimous and friendly for such

Lesser scaup (left), antelope (below) on U. S. Fish and Wildlife refuges.

petty occupations. His method is direct. He meets the issue, not the person, and he meets it head on. Instead of fighting people he convinces them.

Now, if you have ever talked with Gabrielson for five minutes, you know that he is a born convincer. For one thing, having been occupied with conservation most of the waking (and perhaps sleeping) hours of his life, he knows what he is talking about. For another, he has the kind of clear, direct mind that grasps every problem in its essential outlines. He is not one to put on a show of post-graduate erudition, to impress people by complicated intellectual exercises that everyone assumes must be profound because no one understands them. He speaks American English, not technical jargon, and he speaks as a practical man, directly to the point. When he has testified before a congressional committee, he has talked as a man who thinks of soil as what you find in fields, not in laboratories. That is also the way a congressman's constituents think of it. It is not the beauty of a theory that counts, but such questions as how you are going to raise turkeys and make a profit.

"The mistake a lot of conservationists make," Gabrielson says, "is to look on conservation as simply a biological problem. That might be all right if North America was still an uninhabited virgin wilderness. As it is, you have to take account of economics too. When coyotes eat turkeys, the farmer's wife wants to know what's going to pay for the children's shoes." He tells you that he knew more about conservation when he got out of college than he does now, since he has spent the rest of his life in the field unlearning what he knew then! It is not surprising that, whenever he has had a chance to trip up a professor with facts on some statement of theory, he has done it. After one such occasion, the victim expressed himself with heat when he next met Gabrielson. "Why, Doc," Gabrielson replied, "you tripped yourself up when you made that statement. I didn't do it!"

Gabrielson does not hold with those students of wildlife who favor as little positive interference with the balance of nature as possible. He bases his own thinking on the fact that, if only by virtue of human settlement, nature has already been thrown out of balance all over the continent. While predators play their part in culling the normal excess stock of certain species, he maintains that the predators must themselves be reduced by deliberately planned and organized action in many places where the balance has been upset to the peril of their victims. He has not been disposed to be tender, for example, with predators, human or natural, that prey on the trumpeter swans. This is not a moral or emotional attitude. Normally the swans can stand a normal degree of predation, but there has been nothing normal about the situation in recent years.

In another case, he would undertake to build up a population of predators in order to right a balance that had gone the other way. It is simply a matter of the strategic management of wildlife as a whole, with a single view to the maximum benefit for the American people as a whole, now and in perpetuity. He would hardly share the regret, which I con-

fess to feeling myself, that the wildlife species of America should have lost their independence and become domesticated, in a sense, to the point where they must be managed like livestock on a farm, their respective numbers determined at the conference-tables of Washington. However, since the alternative is extinction for many species, the country is fortunate in that the man who has been responsible for its wildlife conservation during a very critical period has been altogether and exclusively practical. Undoubtedly the passenger pigeon would be with us today if a Gabrielson had been given the necessary managerial authority in time.

Gabrielson has no illusions regarding the problems that face the Fish and Wildlife Service in the post-war months and years ahead. He expects a let-down in public standards, the invariable consequence of war, that will make it harder than ever to maintain and enforce laws for the protection of wildlife. On top of that, a great many more of us know how to shoot guns today than five years ago. The expected increase in hunting and fishing has already begun, as witness the fact that during the 1944-45 waterfowl season the number of duck stamps sold was the largest on record. There will be a big increase in public-works projects, such as new roads and dams, and this may result in serious damage to wildlife. At the same time, however, workers in the field of conservation are succeeding in making the public more aware of conservation problems. Gabrielson says the Service will be able to concentrate its forces at many vital points and thus do an increasingly better job of protecting the nation's wildlife resources. He speaks like the retiring general of a great army, which is exactly what he is, and one cannot hear him without sharing his native courage and confidence, his invariably positive outlook.

At our last convention (October 1945), Dr. Gabrielson discussed "The Place of the Fish and Wildlife Service in Some Postwar Problems." Excerpts from his speech are given here.

That the value of cooperation between the Fish and Wildlife Service and other agencies is receiving more and more emphasis is evidenced by the provisions of H.R. 6097, a discussion of which you will find on page 183, in "The President's Report to You."

OVER the years there has been a change in the emphasis of the work of the Fish and Wildlife Service in conserving and restoring wildlife species. In the earlier years, much stress was placed on legal protection and on saving individual birds and other animals. But as the country grew, there grew with it an understanding that the protection of environmental conditions necessary for wildlife species, or the restoration of those types that had been destroyed or markedly deteriorated, was sometimes more necessary than the protection of the individual mammal, bird, or fish. Where suitable environment is available, adequate protection is a guarantee of increased population. This always must be part of the conservation program but only a part. . . .

Soil conservation, water management, reforestation and revegetation of non-forested lands, and fish and wildlife conservation are all elements in one general conservation picture.

Our emphasis is on the last named and the closer it can be correlated with and worked into the programs of the other agencies, the better it will be for our wildlife resources. The fact that this is realized is of fundamental importance in this post-war era

when we are faced with vast development programs. Already in the blueprint stage are plans for superhighways, plans for airfields to be located all over the face of the continent and plans for dams for many purposes which will materially change the character of many of our waters.

It takes no seer to visualize that increased transportation systems mean the eventual spread of highways into many areas which, because of their remoteness, have been reservoirs for the production of wildlife. Likewise, the development of large air bases, supplemented by smaller landing fields, means the eventual development of fast transportation service by air to the most remote sections of the continent. Distances will no

longer be a barrier in protecting certain wildlife species. New concepts of protection, probably new legislation, and new methods of enforcement will have to be developed to meet the increasing threat occasioned by faster transportation facilities.

There are in various stages of planning something over seven billion dollars worth of dams for irrigation, flood control, navigation, and the development of hydro-electric power. Sometimes several of these objectives are combined in one structure or in a series of structures. . . . The Fish and Wildlife Service has fought for many years for the opportunity to make wildlife and fishery studies on these proposed projects at the time the engineering work was in the preliminary stages. It was not until 1934, with the passage of the Coordination Act, that there was any legal basis for so doing and it was much later before it became the practice for the construction agencies of the federal government to give advance information and permit the Service to sit in on the development of the programs. I am glad to report, however, that this is being done to a greater and greater degree. For example, appropriations have been made available to the Service for surveys in the Missouri Valley, the Columbia Basin and the Central Valley project of California. . . .

The Service has had a long struggle to get into the comparatively advantageous position that it now occupies in the planning stages of this game. To put it frankly, it has been necessary, with the support of the various conservation organizations of the country, to become a nuisance before our present rather limited objectives became possible. You may be sure that this nuisance value will continue to be exerted to the end that wildlife and fishery problems will come more and more into consideration in the planning of these and of all other types of development that may affect such resources.

The Service has never asked, nor does it desire, to have veto power whereby it could say that under no circumstances should this or that project be undertaken. It will continue to insist, however, that these resources are of basic importance to the people, and that it is reasonable to ask for the funds and the staff to study these projects in order to appraise their effects upon the wildlife or fishery resources of the areas involved, and to propose modifications which would reduce the bad effects and to get any beneficial results that may be possible. Also, that its report and conclusion go to the Congress with the report of the construction agency at the time the request is made to appropriate the funds.

In other words, all that is asked is that the Congress, which provides the money,

should be as fully informed on the fish and wildlife aspects, both good and evil, as they are on the engineering and other features of the proposed development program.

The Fish and Wildlife Service, working in close cooperation with the state conservation departments, can be of maximum value by providing accurate, reliable information regarding the effects that a proposed construction will have upon the resources of the region involved. It hopes that its nuisance value will continue to be great enough so that it can retain this position and so integrate as effectively as possible the needs of wildlife with the future economic development of the country.

At Home to the Birds

By *Lorene D. Heineman*

Illustrated by Anne Locke

HERE in Nebraska, as in many other states, backyard sanctuaries are popular. The garden clubs foster this interest and the Nebraska Ornithological Union, through its semiannual magazine, is a clearing house of information. County agents and the Nebraska Game and Fish Commission promote shelter belts and carry on educational campaigns about the value of hawks.

Our home in Plattsmouth is on a bluff of the Missouri River at the mouth of the Platte River—along a bird migration route. From early April, when purple martins arrive to fill their house with cheerful bustle and chatter, to the silent days of August molt and September migration, our yard is a center of courtings, nestings and family cares. And winter brings guests from the North.

For ten years we have been planting for the birds. Our practical friends stare at us in pained wonder when we admit we plant fruit trees—cherry, plum, apricot and apple—for our wild guests. We take what fruit they leave. How could we begrudge the red-headed woodpecker all the plums and cherries he wants, when we are convinced that he and his kin saved our elms from borers during the drought years? And we gladly gave up all hope of cherry pies that memorable time when a flock of Bohemian waxwings spent two days in the cherry trees, stripping them of their delicious fruit!

Besides fruit trees, we have American and Moline elm; burr, scarlet and white oaks; ash, black walnut, honey locust and a battered old box elder, full of holes. And of evergreens, we have several kinds of juniper, yews and a pine tree. Of our cultivated shrubs, the bush honeysuckles and the Japanese creeping kind are extremely popular. The old-fashioned flowering currant ranks next. Robins, thrashers and catbirds delight in the poisonous-looking black berries. Among our old-fashioned lilacs I sometimes see grosbeaks, chickadees and siskins feeding on the seeds. We also have coral-berry and plenty of barberry hedge whose fruits will someday bring us more Bohemian waxwings, I am sure.

The steep, fifteen-foot bank which borders our driveway is limestoned in irregular walls and terraces. Roses, young oaks, elms, plums and honeysuckles grow here among some old dead stumps which we have carefully left for our hole-nesting friends. On this embankment we have also planted bittersweet, catbrier, sedums, mountain pink, and spring bulbs. Catbrier berries are relished by robins and flickers, particularly those early arrivals who find February a bitter month.

As our catbrier is still small, we go into the woods in the fall to clip prickly catbrier streamers which we hang on the rose trellis near the feeders. We also gather choke-cherry, elderberry, wild grape, dogwood and sumac berries. They are plentiful and not injured by judicious pruning. But we do not gather bittersweet since it is becoming scarce from bad treatment by too-enthusiastic "nature-lovers." We have tried to naturalize these native berries in the garden, but our hillside is too-well drained and the plants languish away.

At one end of the front terrace are several dozen creeping roses. Covered with red hips every winter, their thorny, creeping canes make fine cover

in all seasons for birds and occasionally for a rabbit family. These courageous wild mothers bring up families successfully right under the nose of the public, but are not detected by the passers-by. The rest of the front terrace is covered with rocks and plants—creeping junipers, lilies, iris, flowering almond, and a huge, sprawling lilac—anything, in fact, to hold the bank.

Sometimes nature discloses a particularly intimate glimpse of her secrets. Such a time came to us when

a chickadee pair chose to nest in a stump in the rock wall, only twenty feet from the back door. The wall borders on the driveway, where cars, children and pets go back and forth. At night, the lights of our incoming car would flash into the nesting hole and show the bright eyes and white cheeks of one of the parents alertly on duty. I discovered later a small shelf just below the entrance, where one bird perched at night, while the other covered the family below. Five youngsters took off from this nest. Later, two wren families were reared in the same place.

We shall never forget our first meeting with a pair of yellow-billed cuckoos. One day, we looked out of an upstairs window and saw them perched on a branch, against a background of acorns and oak leaves, looking like an Audubon print. Both cuckoos craned their necks and shifted their reptilelike heads, a strange and primitive-looking pair. No doubt they thought us strange, too. We were fortunate to see them, for the cuckoo seldom shows himself except as a gray shadow slipping through the treetops. But when we see tent-caterpillars weave white draperies on our trees, we are unworried, for the cuckoos, with their keen appetites, will make short work of them.

In spring, the red-headed woodpecker acts as if he owned our place —lock, stock and barrel. For a month he stands vigilance over the wooden suet feeders. No other bird, particularly of the woodpecker tribe, can eat in peace. Having chosen his own home, he polices the empty woodpecker houses and won't allow even the crested flycatcher to have one, much to our regret. Later in the season he relaxes his Gestapo methods, being busy with his own domestic affairs; then downy, hairy and red-bellied woodpeckers are able to bring their young, to learn the commissary value of filled suet feeders. Being made of wood, there is no metal to injure a bird in freezing weather.

Of several types of feeders, the window feeder with its glass roof brings us continuous pleasure in all seasons. While we munch breakfast toast, a cardinal crunches sunflower seeds just outside the window. Having watched courting pairs in the feeder, we understand perfectly the phrase "she is all a-flutter." Indeed, she often is, and sweetly accepts the seed solicitously offered by her devoted lover. Does she have her tongue in cheek, knowing that at the end of the nesting season he will not permit her to dine at the same table?

The towhees are a charming couple. Father, a gay blade, takes parental responsibilities lightly. Mother is all business as she comes whirling into the feeder like an early autumn leaf. She cracks several seeds and gathers a beakful of choice kernels to carry away. Meanwhile, father flirts about the yard, spreading his showy tail and singing. He likes the bath and often lifts his black velvet head to whistle a carefree note. A jealous husband, he challenges his reflection in the window. When we raise the sash he feeds in peace beside his mate.

Many mourning doves come to our yard but never visit the feeders. The single exception was a dove that flew to the roof of a swinging feeder when my husband was painting it. Face to face, they stared at each other in astonishment. The bird recovered first and hastened away. My husband pronounces that "they are dumb." I am not so sure. They cleverly depend on the protective coloration of our limestone rock garden for their quiet children. Two or three can huddle there for hours looking like innocent bits of rock. Doves seem not to have territorial jealousies developed so strongly as some birds. As many as six pairs have nested at the same time in various places on our two lots.

Winter brings brown creepers, flocks of juncos and tree sparrows. Occasionally, the Harris sparrow spends some time with us. If we are lucky, we catch a glimpse of a golden-crowned kinglet. Tufted titmice and white-breasted nuthatches come to us out of the brushy woods. In early morning, muffled thumpings and tappings tell us that our old friends, the chickadees, and hairy, downy and red-bellied woodpeckers are still on hand, terminating insect careers in winter as well as summer.

We used to buy commercial suet cakes and big, firm chunks of suet for our birds. They are now difficult to obtain, but occasionally we get beef scraps from farmers who butcher their own livestock. After melting the fat, we mix it with sunflower seed, millet and a little paraffin, then pour the mixture into heavy boxes to solidify into cakes. Of course, this can be used only after the weather gets quite cold.

I save all suet and meat scraps from the table. They are ground and mixed with dry bread crumbs, also saved from the table. We keep a big sack of sunflower seed on hand all the time, since such seed is favored by cardinals, chickadees, nuthatches, tufted titmice and towhees. Stale flour or cereal is mixed with suet scraps, crumbs and seeds. We also share our walnut crop with the birds. The nuts are cracked and put into the feeders, shell and all. Chicken feed is purchased by the hundred-pound sack, for the ground-feeders, and sprinkled in protected spots where we have cleared the snow.

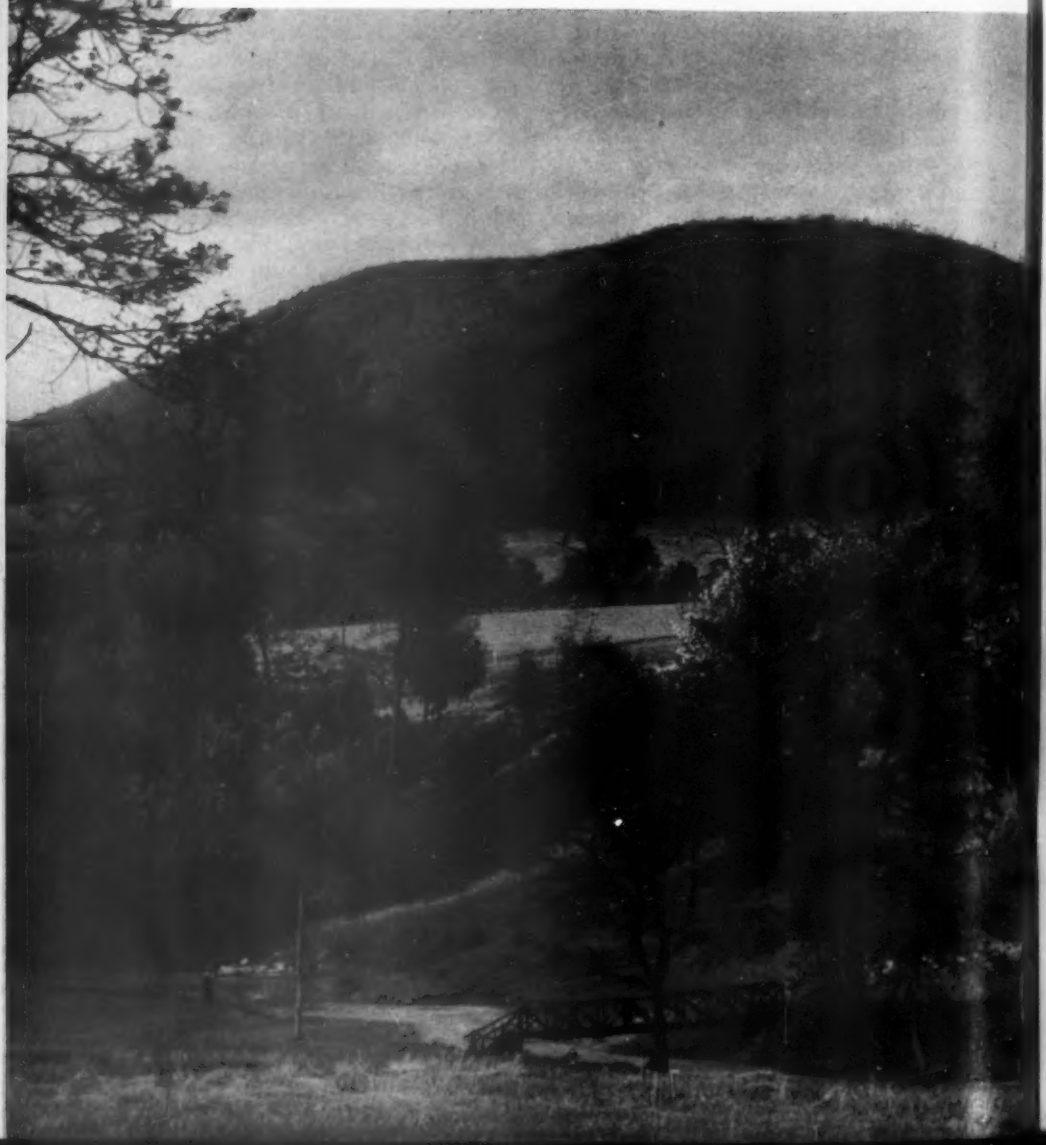
Many people who attract birds, take bird houses indoors for the winter; but ours stay out the year round in case they are needed as overnight shelter during bitter, cold weather. Last winter, after a heavy snow in February, I discovered a little company of bluebirds feeding on our sumac berries. In the evening, as the long rays of the setting sun touched their rosy breasts, I watched them fill their crops, drink from the half-thawed bird bath, and then go to bed in a woodpecker house. The first ones went in quickly and easily, then there was some delay for arrangements inside. Finally seven crowded in. Then an eighth squeezed through the opening, after much poking and fussing. Numbers nine and ten couldn't make it and flew off to other quarters. As dark descended, I could dimly see a small tail extending from the entrance. Sometimes it moved agitatedly as if its owner were being pushed. At times, however, even more of these birds can crowd into one house, for on one morning, I saw the woodpecker lodge practically explode with nine bluebirds making an exit! It reminded me of those trick movies where dozens of people seem to emerge from the same small vehicle. How that woodpecker home must bulge in the night!

A little knowledge of birds has made me humble, for I realize that there is so much more to know. Each season brings new experiences, new revelations, new pleasures. To me, birds are the greatest gift of nature —to live where they are not would be intolerable.

FORESTS IN YOUR F

Have you started a community forest in your town? Children and grown-ups can work together to plant trees, to practice forestry, to protect the soil, to guard the water supply and to provide a habitat for wildlife.

By John K. Terres



R BACKYARD

ON November 13, 1945, bad news struck the campus of Penn State College. A crew of timber cutters were on their way to scalp Mt. Nittany, a privately-owned mountain three miles southwest of the midstate Pennsylvania college. For three-quarters of a century, a passing parade of students had looked across wide Nittany Valley to those green-forested slopes. Famed in song and story, old Mt. Nittany had been a symbol of the College since its founding. If the forested crown of the mountain were cleared, the scar would not heal for a generation.

When Russell E. Clark, bursar of the College and secretary of the Lion's Paw fraternity heard the news, he acted swiftly. Mt. Nittany was sacred to every student, but to the Lion's Paw it had a special interest. They had held their initiations there for many years. Within a few hours, Clark had an option to buy the mountain top for $2,000 and the pulpwood cutters were intercepted and sent home.

But, it was found, sentiment could be made to pay off. A timber survey of the 517 acres of newly-owned mountain top showed a tree-crop value far in excess of the purchase price. A forestry professor at the College prepared a *selective-cutting* plan whereby the mature timber only would be cut

Mt. Nittany has become a college "community forest." Saved from destructive clear-cutting, it will pay its way and yet remain a beautiful landmark. Under skilled forest management, only the mature trees will be removed to stimulate and improve the forest growth.

Forests are usually long-time investments. Most trees grow slowly and need protection from fire, diseases, and insects, and periodic culling like any farm crop. Started from scratch, it may require 20-30 years before products from community forests ease local taxes or supply firewood. A small forest at Waterford, Maine, has cleared $10,000 since 1910. Meanwhile, a thing of beauty has been created; a wildlife preserve and a forest at the city doorstep, where the community may enjoy picnics and pride of ownership in oaks, orchids and ovenbirds.

(Left) Mt. Nittany by Penn State Photo Shop.
(Right) Photograph by U. S. Forest Service.

through a period of years. Thus the forest would be preserved, and yet supply a regular income.

The money from the first cuttings alone would pay taxes, costs of harvesting the timber, and allow additional purchases down the mountain. Eventually, the entire forested slopes of Mt. Nittany will be bought and preserved as a shrine for all Penn State men and women.

Penn State's "community forest" is probably unique in that it was born of sentiment to save a famous landmark. It is unfortunate that this kind of sentiment has not been more prevalent. Despite huge federal and state tree-planting programs to save our dwindling forests, in some parts of the country we are still cutting timber twice as fast as Nature can grow it!

"Community forests" can help restore our timber supply and develop a strong popular sentiment for growing more trees. Federal and state reforestation programs are exemplary, yet do not offer the same opportunity for public participation as in building a community forest, where everyone from children to grown-ups may take an active part. Most important, public ownership of forests prevents their sacrifice to individual greed. Ninety per cent of our forest lands are still privately owned, subject to the whims or avarice of the owners.

Fortunately, not all private woodland ownership is bad. Many farmers and others owning woodlands recognize their value in providing a permanent crop, to be harvested carefully.

George Manning, a farmer I know in central New York, never cuts more than his annual woodland growth. Each year, he consults the Extension Forester and Farm Bureau Agent who survey his woods to determine what his allowable cut shall be. Farmer Manning is not greedy, moreover he wisely sees the fallacy of cutting all his timber at once and thus killing the

goose that lays the golden eggs.

He once expressed the philosophy that should be taken to heart by every farmer and woodland owner in the United States when he said: "I'm glad I was satisfied to take only a little from my woods when it was young. Each year it produces a little more, and I'm going to have a *real* forest to pass on to my boy. After all, we're only caretakers of our resources. Unless we can pass them on in better shape than we received them, we've not only failed ourselves, but forsaken every child who is a future farmer or city-dweller in America!"

When Penn State College took a small mountain forest out of private ownership and saved it from destructive clear-cutting, another link appeared in the chain of "little forests" that is slowly lengthening throughout the country. Enough of them may be a future bulwark against our disappearing timber supplies. Ten thousand community forests in the United States on 20 or 30 million acres of land would greatly aid in the struggle against depletion.

According to George A. Duthie of the U. S. Forest Service, at the end of 1945, there were 2300 community forests in the United States on more than 3 million acres of land. New York State has almost one-third of them with 650; Michigan has 429 of which three-fourths are school forests; Wisconsin has 259 on two million acres, two-thirds of the acreage of all community forests in this country!

Professional foresters define community forests as properties usually owned and operated by a village, city, school district, township, county or

***Proper land use* is the big objective of conservation. Millions of acres of steep, eroded lands need reforestation. Almost every community has idle, gullied, or unsightly lands that could be beautified and made useful again by planting a forest. Black locust trees and some of the pines grow rapidly. The pictures show a badly gullied, worn-out pasture planted with black locust seedlings. After four years, the gullied land was healed and transformed into a useful tree plantation. It will pay its way by raising songbirds and fence posts. Photographs by Soil Conservation Service.**

other political subdivision. They may also be owned and managed by 4-H clubs, hospitals, schools, churches and other organizations.

The community forest idea did not begin to take firm hold in this country until about 1909, at the time the first community forest in New York State was founded at Gloversville. Planted to protect a water supply reservoir, this forest owes it success to the enthusiastic leadership of W. F. Davies, Superintendent of the Gloversville Water Works.

In 1913, Massachusetts passed the first state law encouraging town forests, and others followed. Today more than twenty states have legislation stimulating community forests by offering free planting stock, or allowing such forest lands to go tax free.

The community "school forest" has particular promise. There are now almost 1000 of them in the United States. Although they are still an infinitesimal part of our forestland, their power to arouse forest sentiment is great.

In the school forest, children learn that trees must be protected from fire, disease and insects, that management by "thinning," (cutting inferior trees for fuel or pulpwood), speeds the growth rate of the remaining "crop trees" that will someday provide lumber.

They learn that a forest is a community of living things, and that wildlife, so essential to the well-being of any forest, can be greatly encouraged by "managing" the woodland. And the children also learn that as in a bank, one must take less than the annual growth (interest) if the capital is to grow larger and larger.

Mr. E. N. Blomquist of Iron

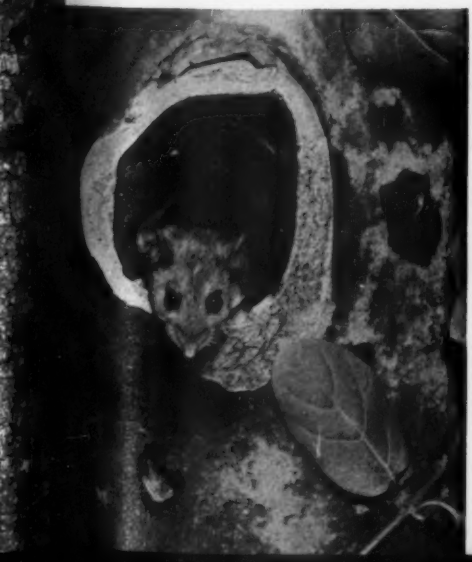
Children develop a deep and abiding interest in forests they have planted and tended themselves. In the school forest, they learn that wildlife is essential to the well-being of the trees; that living organisms in the forest are interdependent on each other; that the forest is a vast living community comparable to their own, where each plant and animal serves an individual purpose that in some way serves the forest as a whole. Photographs, from left to right, are: school children planting trees (U. S. Forest Service); sparrow hawk (Sam A. Grimes); deer mouse (A. D. Cruickshank); raccoon (Olin S. Pettingill); "den" tree (Soil Conservation Service).

Mountain, Michigan, is superintendent of Felch Township School, having one of the most successful school forests in the country. This 320 acre woodland is five miles from the school. Each teacher in all twelve grades must teach at least one class a year in the school forest.

Art classes sketch landscapes and individual trees. Music classes assemble under the pine trees where they listen to the sighing wind in the evergreens. The class discusses what kind of musical theme a composer would use to illustrate the "singing of the pines."

In mathematics classes, students survey and map the school forest, compute land areas to be planted with trees and perform other practical lessons in arithmetic. The bookkeeping classes are custodians of the forest expenses and income. Students built a shelter house in a grove of cool, green

Some dead and hollow "den trees" should be left standing and "wolf trees" girdled for hole-dwellers. Thus homes are provided for sparrow hawks, chickadees, woodpeckers, and other hole-nesting birds feeding upon forest pests. Small mammals, which may number several hundred an acre, are highly important in controlling certain forest insects. Deer mice sometimes resort to hollow trees. They destroy enormous numbers of destructive pupating larch sawflies and have been credited with its control in some larch plantations. The hole-dwelling flying squirrels are fond of insects. Gray and fox squirrels and raccoons all require hollow trees for their homes.



pines beside an unimproved logging road. They control blister rust, which destroys white pines, by uprooting the alternate host plants—wild currant and gooseberry. They have planted 90,000 trees on the land and constructed fire lanes around the tract to protect the forest.

Science classes census songbirds and game, and collect insects, plants, snakes, rocks, and soils for indoor study. In a narrow gorge of the Sturgeon River, on the site of an old log splash-dam, they plan to build a new dam flooding 160 acres of cut-over land. Timber and stones for the dam will come from the school forest. The dam will create a lake a mile long which will be stocked with fish. Waterfowl nesting islands will be built in the lake, for it is to be a waterfowl refuge. Under the guidance of the Michigan Conservation Department, the boys and girls will plant pondweeds, wild celery and other wild duck food plants to increase the waterfowl food supply.

According to Mr. Blomquist, every child in this remarkable school is a nature lover and conservationist. In a recent letter Mr. Blomquist says, "There are no signs of vandalism in our tract although we have visited our school forest in groups as large as 300. It is my firm belief . . . that juvenile delinquency has been combated large-

ly because of lessons learned in the forest. . . . Boys and girls sense their responsibility of ownership in the forest and respect their property and that of others. . . ."

Anyone can take the initiative in starting a community forest. It is not difficult to obtain the support of Service Clubs, Chambers of Commerce, and other organizations. At Malone, New York, the Chamber of Commerce started a forest of its own. American Legion Posts and Sportsmen's Clubs have founded community forests in cooperation with school children.

Almost any type of land that will grow trees is suitable for a community forest. Many of them start modestly with from one to 100 acres of forested, cut-over, or open land. Even a few acres should not be rejected for a beginning.

Idle, or unsightly land has been bought for as little as two to $10 an acre. There are more than 135 million acres of this kind in the United States. The town of Russell, Massachusetts, has an interesting example of putting steep, unproductive lands to proper use.

In 1923, Russell purchased 100 acres of forest land with an appropriation of $100. Like many other towns in the Northeast, Russell has had the expensive problem of maintaining back roads that served only a few run-down farms. The problem increased in the next decade. The occupants of the steep, hillside farms were barely able to make a living. Keeping the roads passable in winter, and transporting the children from these isolated farms to schools, were heavy burdens on the little town of 1300.

For the benefit of the poor farmers themselves as well as for town finances, the farms were gradually acquired over the years, and added to the original town forest of 100 acres. More than 300,000 trees were planted on the worn-out farmlands. Today, Russell's town forest embraces more than 3000 acres, and its timber is valued at almost $50,000.

If community forests are to be used for recreation as well as income, they should be as near the city or village as possible and should have a stream

Nothing is more terrible in its destruction of forests than fire. It is accompanied by an appalling loss of wildlife, and destruction of habitats.

Insects may devastate forests almost as completely as fire. Severe outbreaks of forest insects may be caused by disturbances of biotic balance. Unfortunately, spraying DDT or other chemicals for control not only kills the pests, but destroys beneficial insects and other organisms that ordinarily hold the pests in check. Thus the biotic balance is thrown further out of gear. Natural control of insects, by manipulating the forest composition, has great promise for the future. Intelligent cutting practices may prevent insect eruptions by reducing their food supply, or so changing light, evaporation and temperature that excessive populations cannot occur. Photographs by courtesy of U. S. Forest Service.

or lake. Near Syracuse, New York, the Board of Supervisors of Onondaga County acquired 2200 acres of partly forested, abandoned farm land in 1930. An old farm house was remodeled into a lodge that is used for picnics and week-end parties by Sunday Schools and other organizations.

The forest is not only growing into a source of future income, but has become one of the most attractive recreational centers in the State. Thousands of people visit the tract, known as Onondaga Highland Forest, where along nature trails they can see songbirds, pheasants, grouse, deer and rabbits. There are excellent possibilities that the forest may someday employ a full-time forester and naturalist.

Trees for community forests are supplied free by many state nurseries. If trees are to be planted on the tract, adults and school children of the community should join in setting them out. Not only does this solve the labor problem, but planting trees with their own hands gives people a strong personal interest in the forest.

At Canton, North Carolina, a high school superintendent and students started planting trees in 1926 on the 500-acre town forest in the mountains three miles away. They have made it an annual Arbor Day project ever since.

There are several ways in which community forest lands may be acquired. About one-third of all community forests in New England were gifts from public-spirited individuals or associations. Many are obtained by direct purchase. In Wisconsin, New York, parts of New England, South Carolina and other states, many community forests were created from tax-delinquent or tax-reverted lands.

Some 4-H clubs have successful forests. The Escambia County, Florida, 4-H Club acquired a 400-acre cut-over tract near Pensacola in which planting of longleaf and slash pine was started by the club in 1944. Forest products they will harvest are pulpwood, naval stores, railroad ties and saw timber.

With the ending of the war, community "memorial forests" are being established all over the country to

Some of our most important checks on insect pests belong to the forest understory. Shrubs and herbaceous plants of the forest floor and its borders harbor useful birds, spiders, mites, and beneficial insects. In their dying, these plants give depth and richness to the soil. The ground-dwelling salamanders, frogs, and many snakes are highly insectivorous. Under the leaf mold, shrews and forest mice destroy insects harmful to the woodland. And in the forest soil are born the larvae of ground beetles, the adults of which seek out and devour the caterpillars of gypsy moths and other forest pests.

Photographs of eft (right) and yellow lady slipper (left) by Gottscho-Schleisner.

honor men who gave their lives in the recent conflict. Lake City, Minnesota, dedicated a 25-acre memorial forest in 1944; Merrill, Wisconsin, dedicated an 800-acre memorial forest in 1945; and the Nicholas Memorial Center at Summersville, West Virginia, was dedicated a year ago. The town of Watsonville, California, has a 3-acre redwood memorial forest. Other memorial forests in prospect are at Mount Airy, North Carolina, Grand Rapids, Michigan, and Turner, Maine.

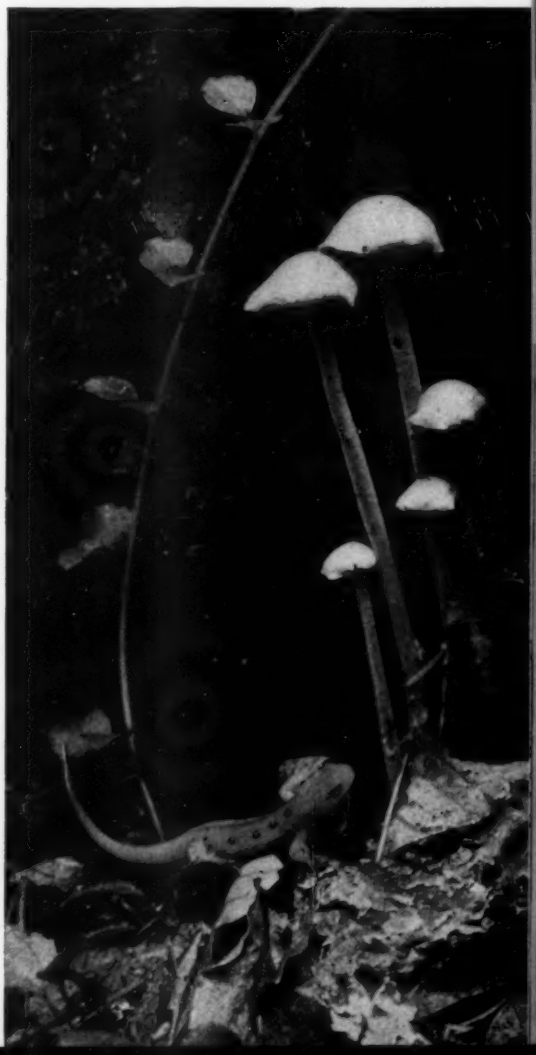
A forester, whom I knew, was killed in Germany in the Battle of the Bulge. He had written glowing descriptions of Europe's community forests, of their permanence, their careful management, and the love and respect with which communities held them. But I think I shall remember him best for his words just before the war. We stood at the foot of a hillside within a stone's throw of a Pennsylvania village. The morning sun was bright, but the gullied slope, stripped of its forest cover, was fire-blackened and desolate. He was looking at the hillside as he spoke, but I knew by his smile that he was not seeing the ugly picture. He was remembering the forest as it once stood.

"Someday, I'd like to see a small forest in the backyard of everyone in this country—a forest within walking distance, where people in every hamlet, town, and big city could get the smell of pines in their blood, hear a hermit thrush sing, and get to know that a forest is a complex, living thing.

"It would be a place where they'd learn that you can eat your cake and have it, too—that properly managed forests like Tennyson's brook go on forever. I think that selling them the idea that they were really part-owners of some wild flowers, a patch of pines, and some bright-eyed birds would work a conservation miracle!

"Once our kids started learning that, besides trees, a forest is made up of soil, insects, mosses, shrubs, vines, and small plants with quaint names like enchanter's nightshade—well, I don't think you could keep them away! In an even greater way, the little forest could be a workshop for building good citizenship—a place of learning to respect the rights and property of others."

Jim Saunders will never see that day, but with the complete awakening of America to its desperate need for both big and "little forests"—maybe Jim's youngster will.



All the Birds

by Harriet Culp

I HAVE a friend who is married to a writer. She says she doesn't really mind his being one but sometimes she thinks it's a mistake that he stays around home so much. It might be better if he had to go to an office and write. But Alf hasn't an office and he likes to putter around the house between inspirations. He takes up various hobbies from time to time which he says is to give his mind a change of scene. Some of his hobbies are very useful. My friend has a job downtown and she says that in a way it's nice to feel that Alf is home looking after the place. But sometimes she's not so sure.

She was closing her typewriter for the day when the phone rang. It was her husband.

"Don't put your car in the garage when you get home," he said. "I'll run it in later."

"Why?" she asked. "Are we going out?"

He paused a minute. "There're some robins building a nest where that brick's out above the door. I'm afraid you'll scare them."

"Why should I scare them?" she asked rather testily. "I don't look any worse than you do."

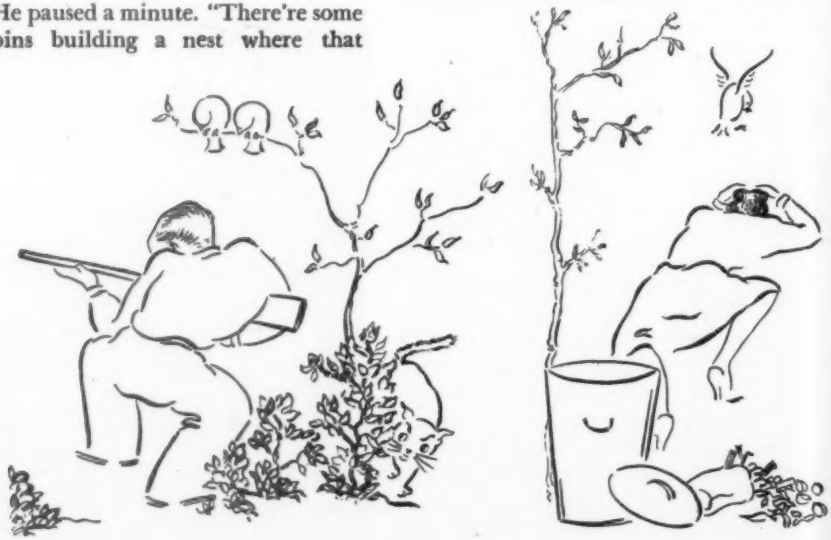
"They know me," he answered. "It'll save you a lot of work, anyway. You just leave the car out every night and I'll run it in after dark."

She agreed. One night about a week later, just after supper, Alf came back to the kitchen where she was wrapping up the table scraps in newspaper.

"I'll take that out for you," he said. She looked at him suspiciously.

"What's the idea? You never did that before."

"Oh, you work hard all day. I don't think you ought to be trudging back and forth to the garbage can every



Knew Alf

illustrated by Gillian Quennell

night. I've thought for a long time I ought to help you more."

"Tell me the truth," she said. "What's up now?"

He looked sheepish. "A pair of catbirds is nesting in the arbor by the garbage can. They know me. I'm afraid you'll run them off."

"Alf, you talk like birds are human. I bet they don't know the difference between one person and another."

"You'd be surprised," he said, picking up the scraps. "Birds know the minute they can trust a person. Anybody they're not sure of frightens them."

"Well," she told him, "it's all right with me if you want to empty the trash every night and put my car in the garage. But you make me feel unclean. Even birds fly from me." She went to the mirror and examined her reflection. "I never knew before that I was a human scarecrow."

Things rocked along in the same old way for a while and she began to get sold on the idea of having Alf help. She thought if he didn't mind doing other things he might be willing to work in the garden. She was amazed when he consented.

"Hoe those weeds over there," she told him, pointing to a space between the carrots and salsify. She had to answer the phone and when she came back he was forking up the ground as though he were digging a trench.

"No need of that," she protested. "Shallow cultivation is enough. You might damage the roots."

"Oh, this is fine for them. Gives the plants a chance to breathe. Look at

the worms! See that wood thrush over there watching me?"

"Listen," she asked, "are you helping me or your little feathered friends?"

"All right, all right," he answered, "I thought I was doing the proper thing."

She had become used to a lot in the years of their married life and she wasn't too surprised when a neighbor called her one morning at her office.

"If you can get away now I wish you'd come home," the neighbor pleaded. "Alf's running around here with a gun. Someone's going to have the law on him."

Someone came in then and she couldn't leave but she called the house and finally got Alf.

"Look here! The neighbors are complaining about you and a gun. What under the sun are you doing?"

"Say," he cried, "I'm glad you called. The robins have hatched out. There's a stray cat hanging around and I'm going to scare the daylights out of him with this gun."

"Go on back to your typewriter, my avian Galahad," she said. "Those robins know how to take care of their young. You can't make a living bringing up a bird family."

He wasn't in sight when she got home that evening but he soon appeared down the alley coming along at a dog trot. "Hold on!" he cried. "Wait! Don't go in the front door!"

"What's the matter now? Fresh paint?"

"A pair of thrashers is building in that bush by the front steps," he panted. "I'm afraid you'll scare them off. It's not as though it isn't just as convenient to use the back door. I can slip out every other day or so and sweep the porch, too. They know me. I told the newsboy to leave the paper back here. Say, there's that cat again!"

When she got to the back porch she found the bundle of scraps from the night before. "Alf or no Alf," she thought, "and birds or no birds, I'm going to put this in the garbage can."

She started down the flagged walk. Just as she reached the arbor, thinking of nothing in particular unless it was why writers are so queer, something came down out of nowhere whirring and scolding and darting at her person. She says she'd never had a catbird bop her on the head before. There wasn't anything to laugh about, either. She realized too late that he just didn't know her. She dropped the bundle and ran, holding her hands over her head and screeching. All Alf said when he got back was: "I told you so. They know me."

"I'm sick and tired of hearing you talk about birds knowing you," she raged. "This isn't funny any more. I'm glad for you to have an innocent hobby but I don't want to be attacked on my own property."

Alf didn't say much the next evening but she could see he was worried. Finally he cleared his throat. "About the back door," he began, "I saw a Carolina wren—"

She jumped to her feet. "Listen to me. I'm glad to leave my car out front. I don't mind not being able to walk to the garbage can. I've gotten so it's no hardship to come in by the back door. I've been the victim of a ferocious attack. But I tell you right now I will not enter my house by a ladder to the second story and you needn't suggest it!"

He was silent for a minute. "Oh well," he finally said cheerfully, "maybe they're not actually going to build there. Lots of times a wren will start three or four nests before he settles on the site he likes. As far as that goes," he concluded, "I can meet you every evening and lead you in. If I'm with you it'll be all right. They know me."

She's pretty sure by now that they know him. But she can't help wondering what's going to happen next.

Birds OF THE RAILS

By Albert C. Hale

BIRDS account for the names of eighteen crack trains in the United States and Canada, a perusal of the Official Guide of the Railways reveals. Most popular bird among train namers is the owl, for five of the trains, all nocturnal like their namesake, bear that designation.

Best known is the New Haven's between Boston and New York, while the other "Owls" include the Lackawanna's express from New York to Buffalo; the Southern Pacific's connecting Los Angeles and San Francisco through the San Joaquin Valley, and another in Texas between Galveston, Houston and Dallas; and finally the Canadian National's from Prince Albert to Regina, Saskatchewan.

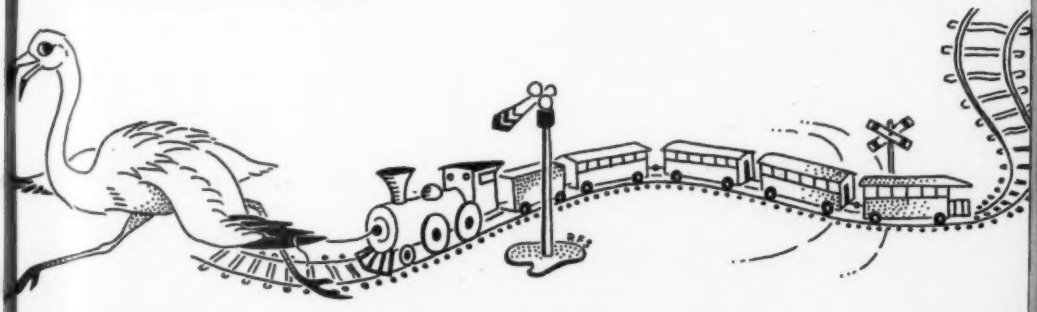
Three "bird" trains are shared by New England and Canada. The "Alouette," French for skylark, and the "Red Wing," run between Boston and Montreal over the Boston and Maine-Canadian Pacific, while the "Gull" connects the Massachusetts capital with the Maritime Provinces, operating on four railroads.

As a railroad aviary St. Louis tops the list. From the great city on the Mississippi runs the "Nighthawk" to Kansas City over the Alton-Burlington route, the Missouri Pacific's Diesel streamliners, the "Colorado Eagle" to Denver and "Missouri River Eagle" to Omaha, and the "Blue Bird," pride of the Wabash, which serves Chicago.

Two other fine Mid-west trains are the "Red Bird," Pennsylvania-Wabash flyer between Chicago and Detroit and the "Nightingale," overnight Omaha-St. Paul express on the Chicago, Minneapolis, St. Paul and Omaha line.

In the South and Southwest there is the "Flying Crow" of the Kansas City Southern-Louisiana & Arkansas, running between Kansas City, Port Arthur, Texas and New Orleans; the "Flamingo," Louisville and Nashville-Central of Georgia-Atlantic Coast Line resort special from Cincinnati to Florida points; and the "Delta Eagle," day train between Memphis, Tennessee, and Tallulah, Louisiana, on the Missouri Pacific.

One other Far Western train is named for a bird. It is the Southern Pacific "Lark," overnight all-Pullman streamliner between Los Angeles and San Francisco over the coastal route.



PYMATUNING

Although the years have brought changes to this area, it is still one of the places you will want to explore when in a field-trip mood

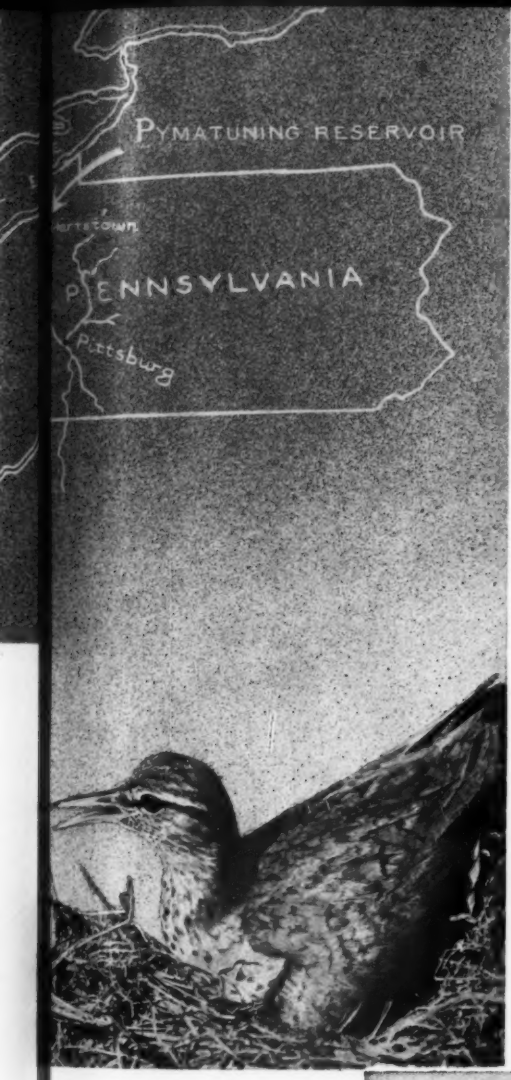
By Hal H. Harrison

Photographs by the Author

OF THE many choice natural areas east of the Mississippi to which naturalist-explorers have long made pilgrimages, Pymatuning has been one of the favorites. Lying along the boundary between Ohio and Pennsylvania, this region was once a great swamp. Now a lake and a waterfowl refuge, the area has a history that is worth recalling for the sake of those people who have yet to visit it for the first time.

Going back through the geologic time, we find that when the great Pleistocene ice sheet came creeping down over the land, it halted along a line extending diagonally from the southwest corner of Ohio, across the northwest corner of Pennsylvania, to the Finger Lakes region of New York. The northward flowing streams were deflected southward by the great wall of ice; and when at length this receded, it left the old channels so choked with debris that the streams continued to flow in their new southerly courses. Again the ice advanced, and on its second retreat it paused just north of the Pymatuning area leaving there a deposit of transported material, which forms part of the Cleveland moraine. Long glacial arms, stretched southeastward from this moraine, one following down the east side of the Pymatuning-Crooked Creek area and two between the Shenango River and Pymatuning Creek. Dammed by walls of ice, waters gathered between to form a large lake.

A lake, however, considered in relation to geological time, is but an



ephemeral thing. In the course of centuries, sediment from inflowing streams and the accumulation of plant remains from the successive societies of aquatics that established themselves in its waters, built up the lake bottom until open water became swampland, with its characteristically luxuriant vegetation. Thus Pymatuning Swamp, with its 10,400 acres of unspoiled wilderness, evolved and became a paradise for the naturalist.

Tamarack grew there in unusual abundance. Hemlock, black ash, tupelo, cucumber tree, black walnut, and many other trees lent variety to the forest canopy. Beneath the swamp forest grew an undercover of fragrant spice bush, dainty pinxter flower, hawthorns, crab apple, wild plum, and the red-fruited winterberry. On the swampy forest floor many kinds of rare and lovely orchids blossomed—large yellow lady's slipper, several species of fringed orchis, twayblade, and showy orchid. Here also were painted trilliums, the red-flowered wake robin, dalibarda, giant hellebore, and the little glossy-leaved goldthread. Arbutus made the May woods sweet, and pipsissewa and shinleaf shed their fragrance on the summer air. Bright blue clintonia berries and the red fruits of wintergreen dotted the ground with vivid color.

There were ferns, too, ranging from

Swamp vistas: above left, from the Linesville Road; right, from Ford Island. Above, in the midst of Pymatuning, sits a nesting spotted sandpiper.

the tall stately clumps of cinnamon and interrupted fern to the little fleshy-fronded grape ferns.

In the open, boggy meadows, high-bush blueberries ripened in the sun; among the steeplebush and meadow-sweet tangles of wild roses blossomed; cornel and red-osier dogwood tinted the thickets with their red stems and white flowers and fruits. Slender petal-crowned stalks pushed their way upward through the lush swamp grass and sedges—swamp saxifrage, rose pogonia, grass pink, arethusa, small yellow lady's slipper. On the soft, moist beds of sphagnum, sundew and pitcher plant spread their rosettes of curious leafy traps; and in the shallow pools, bloomed water arum, lizard's tail, and buckbean. Here and there, tall crowns of royal fern reared their flowerlike fronds above the grasstops.

Plant life was not the only attraction, for birds and other animals were abundant. The spring woods rang with the wild, clear song of Grinnell's water-thrush; scarlet tanagers flamed against a lush green background; pileated wodpeckers made the swamp resound with their calls.

When winter came, other birds arrived from the North—crossbills, pine and evening grosbeaks, snowy owls,

Above, a tree swallow entering its dead stump nesthole. At right, a black tern alighting at its water-level nest. On the opposite page above, two young tree swallows waiting at a nesthole door.

snow buntings and red polls. Muskrats, weasels, foxes, deer, beavers, raccoons, and minks, all knew this place as home. Surveys of the area (in 1928 and in 1933) revealed 245 different species of birds, and 466 species of plants. Such diversity, as well as the rarity of some of the forms, made the swamp a fascinating place to explore.

The greatest significance of the area lay in its value as a vast outdoor laboratory. Here scientists could observe natural forces at work, untouched by human interference. Few such wild areas remained convenient to civilization,

But the economic considerations which had caused the passing of other wilderness areas were a century ago already ranging themselves against Pymatuning. As early as 1843 the General Assembly considered a proposal for draining the swamp to make more farm land. Similar plans were submitted again and again, and a few hundred acres near Linesville were actually ditched to make the black muck available for onion growing.

In 1913, an enlightened Water Supply Commission put a definite stop to the drainage proposals by their convincing arguments that *more* water rather than less was needed. The swamp itself helped to regulate the water table in the surrounding area, but since mills had been built along the Shenango and Beaver Rivers, a more even flow of water in these streams was desirable. Changing the swamp into a reservoir would regulate the flow and thus be helpful to industry and in flood control.

In 1925, authority was given to the Department of Forests and Waters to acquire land so that a dam and reservoir could be built. The project meant the flooding of much of the original Pymatuning Swamp. Plans called for two reservoirs, the lower one to extend from the main dam near Jamestown, Pennsylvania, to the highway and railroad fills across the reservoir near Linesville. Both these fills would serve as a second dam. The water created in the upper reservoir would be controlled by a spillway along the Linesville road.

What of the swamp with its rich plant and birdlife? Were these to be sacrificed for flood control? Were all

A Virginia rail at home in Pymatuning.

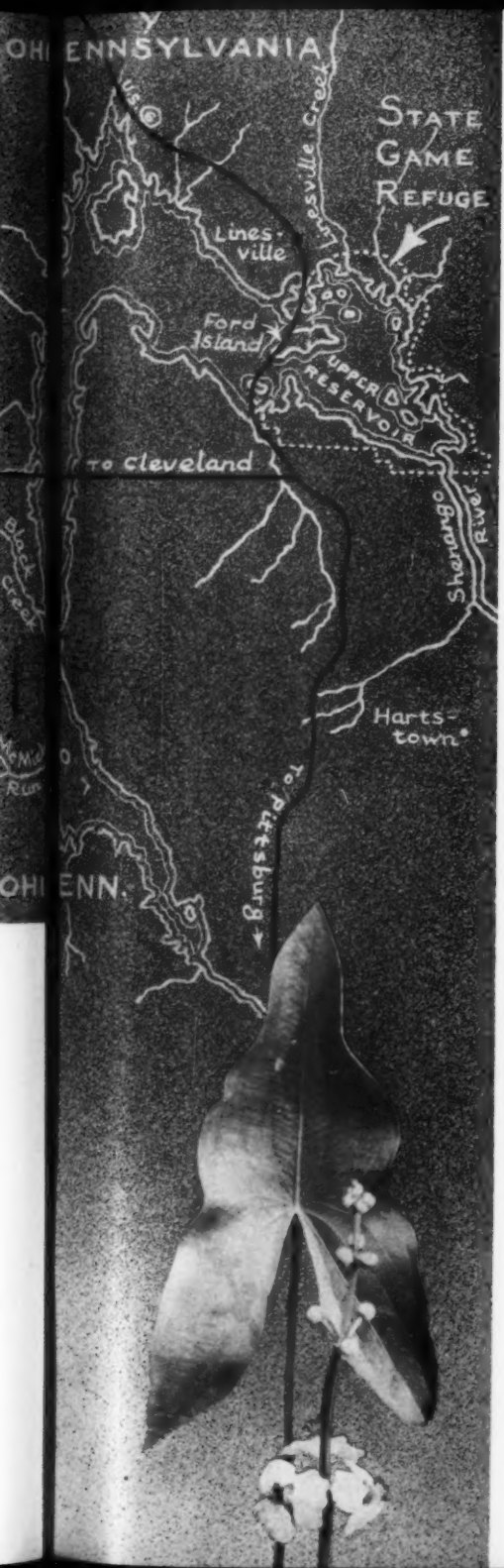
With a skunk cabbage roof, a black duck's nest houses seven eggs. At right, the lady mallard house keeping in Pymatuning. On the opposite page, the pointed leaf of the graceful arrowhead.

the old attractions to be henceforth only a memory—the Grinnell's waterthrush stepping daintily along as it carried food to its young in an upturned stump; a veery pouring out spiraling music from the top of a poison sumac; sundew pushing its gleaming tentacles through the sphagnum of the bog; the tropical profusion of the swamp forest, sheltering such treasures as lady's slippers and clintonia? For many months, conservationists were divided on the issue.

Then the Pennsylvania Game Commission suggested that the upper reservoir could be made into a waterfowl refuge. And in 1935, the Pymatuning State Game Refuge (embracing 3,670 acres of which 2,500 were water), the largest in the State, came into existence with the Game Commission in full charge.

Now, eleven years later, it is heartening to survey the results. Proponents of the refuge can point with justifiable pride to several hundred thousand migratory waterfowl that stop there during spring and fall migrations each year. They will relate with particular pride that 70,000 waterfowl have been counted in the refuge in a single day.

If you visit Pymatuning in November, when waterfowl are heading



south, stand on the flagstone walk in front of the Game Commission's museum on Ford Island, and look down to the placid waters of the upper reservoir and you can see thousands of ducks resting there, feeding and gathering strength for their journey southward. The shallow waters support an ample growth of wild celery, spatterdock, duckweed, and coontail to entice the hungry migrants; the surrounding edges of the remaining swampland provide cover. Turn toward the east. You can see in the distance the nest of a bald eagle high in a dead hemlock stub. Fifteen years ago that hemlock was alive. Around it were many more. Here perhaps the black-throated green warbler found a habitat to its liking. In years gone by, a purple finch may have found the eagle's tree suitable for nesting, and surely crows nested high in its crown. Today, the eagles find companionship in the tree swallows that inhabit the dead stubs nearby. On the floating masses of vegetation that form little islands around the bases of the dead hemlocks, there may be the nest of a pied-billed grebe. In other areas, black terns have found these floating islands ideal for their nesting colonies.

Thus new conditions have attracted new inhabitants. In 1928 George M. Sutton's "The Birds of Pymatuning Swamp and Conneant Lake, Crawford County, Pennsylvania," listed 245 species of birds in the area. In 1940, Ruth Trimble, then of the Carnegie Museum staff, in her paper, "Changes in Bird Life at Pymatuning Lake, Pennsylvania," added twenty-two migrants, five accidental visitants, fifteen breeding birds, and the verification of the supposed breeding of the pied-billed grebe, the great blue heron, and the blue-winged teal. This is a total of forty-five important changes in bird-life since the completion of Pymatuning Reservoir.

Since Miss Trimble considered only

Hartstown Marsh on the edge of the Pymatuning Refuge in Pennsylvania.

those species that were directly affected by the presence of water, a study of the changes in other species, especially the passerines, remains to be made. Miss Trimble declared that, "Only in consequence of great changes in ecological conditions has it been possible to add to Dr. Sutton's comprehensive investigations."

Although thousands of ducks resting and feeding on the upper lake is always an awe-inspiring sight, I think the most gratifying result of changes wrought by the passing of the swamp and the creation of the lake is the number of breeding ducks that have been attracted to the refuge.

Breeding waterfowl were rare in the original swamp. Mallards and black ducks, now abundant breeders, were seen infrequently. Ducks breeding at Pymatuning since the establishment of the reservoir are the gadwall, baldpate, pintail, green-winged teal, shoveller, redhead, ring-necked and ruddy. For baldpates, gadwalls, redheads and ring-necked ducks, the Pymatuning records are an eastward extension of their normal breeding ranges. R. L. Fricke, of the Carnegie Museum staff, is deserving of much credit for these records.

The creation of seventy miles of shore line made many new mud flats attractive to shore birds. Such new migrants as the ruddy turnstone, Hudsonian curlew, golden plover, pectoral sandpiper, white-rumped sandpiper, red-backed sandpiper, eastern dowitcher, marbled godwit and northern phalarope have been added.

It must be admitted, however, that the bird watcher's gain at Pymatuning has been the flower lover's loss. Although many aquatic species have supplanted the many that were drowned, one would not willingly trade an orchid for a cattail, nor a dwarf cornel for a mass of duckweed.

For those who have found happiness afield at Pymatuning during recent years, there is still a great deal of original swamp left. In the beginning there were over ten thousand acres, extending for about fifteen miles with the widest point about two

The author lost in 3000 swamp acres.

miles and a quarter. After spending a day in the great blue heronry swamp between the Blair Bridge Road and Hartstown; after being lost for hours and finally getting out by using the sun as a guide, I have concluded that I would have no use for ten thousand acres of swamp if they were still available!

Although not there in the abundance of former years, most of the plants of the original swamp are still to be found by the persistent botanist. Probably exceptions are the showy lady's slipper *(Cypripedium hirsutum)* and the pitcher plant *(Sarracenia purpurea)*. Sundew *(Drosera rotundifolia)* and two of the prized bog orchids, the moccasin flower *(Cypripedium acaule)* and the yellow lady's slipper *(Cypripedium paviflorum)* are still quite common in certain places.

Upland game has found a veritable paradise on the 1170 acres of land that are included in the refuge. Cottontail rabbits, squirrels, woodchucks, ring-necked pheasants and bob-whites are particularly abundant. Deer and raccoons are also present. The marshes support many muskrats.

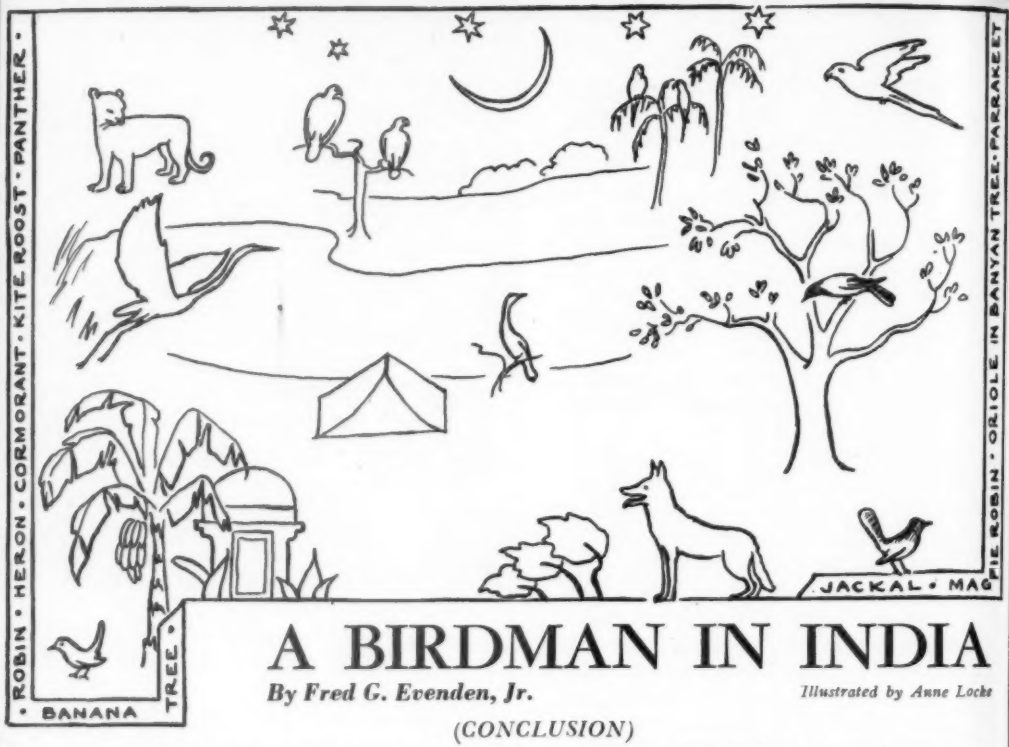
Pymatuning is steeped in legend and Indian lore. Indeed, the name itself is Delaware Indian for "The crooked-mouthed man's dwelling place." One of the most popular myths of the region is that of a boat, one of De Soto's fleet, brought up the rivers and abandoned in the swamp. It is said to be about sixty feet long with a carved figure on the prow. Indians are said to have brought salt to barter with the white men, the salt having come from the lost ship. The largest and most ancient boat that I have ever found in the swamp was a leaky, flat-bottomed fishing boat tied under Blair Bridge where the Shenango River passes through the swamp.

At Pymatuning, as in many other natural areas throughout the nation, civilization has encroached gradually but persistently. Most of us would like to have preserved the old Pymatuning Swamp. But to follow such wishful thinking very often is to pass up an opportunity to bring a successful venture out of what might otherwise have been a wildlife tragedy.

Least bittern family portrait.

Had conservationists spent all their energies fighting the flood control measure that devastated much of the swamp they could have done no more than postpone the inevitable. Instead, wide-awake Pennsylvania and Ohio conservationists, sportsmen, and interested organizations and individuals worked together to salvage a refuge that is today enjoyed by many people.

I think that Pymatuning stands as a grand example of what can be done to preserve natural resources that many are willing to give up as lost. Who can say that the Pymatuning State Game Refuge is not destined to play a greater part in the conservation of natural resources than the old Pymatuning Swamp left untouched?



A BIRDMAN IN INDIA

By Fred G. Evenden, Jr.

Illustrated by Anne Locke

(CONCLUSION)

ALTHOUGH my companion Bob and I spent many happy hours birding at the lake near our camp (which was a little distance out of Calcutta as described in the previous installment) there are two other environments to tell you about—the park-like area and the jungle.

Although the birds were not out in plain sight in the groves (as they were at the lake) there were plenty to be found when we looked for them.

A few were very common, like the common mynahs and the green bea-eaters, which, incidentally, were always seen in pairs. Others, like the Indian tree-pie, a counterpart (with a different color pattern) of the American magpie, were silent and shy birds. The tree-pies usually could be found in pairs, but as soon as we saw them (and they saw us), they would slip out the far side of the tree and disappear into another tree. This sort of chase became very provoking as the days passed. In the camp area these birds were not given to "exercising their vocal cords."

One morning, Bob and I were out walking in a four-foot layer of ground fog. We came onto a clearing in a grove in which the tall stump of a palm tree loomed up above the fog layer. On that trunk were three Indian green parrakeets and a very beautiful golden-backed woodpecker: a riot of color in greens, yellows, reds, black, white, and gold! This particular species of woodpecker was seen many times in the groves, but only when we flushed it from where it had been working silently.

The magpie-robin was an interesting little bird that we saw quite often. The male is a facsimile, in black and white, of our own black-billed magpie, but here is the difference—it is a small bird that to me is like our own Oregon towhee in shape, size, and habits. The female has brown and fulvous replacing the black of the male. Of all the Indian birds that I know the magpie-robin has the most beautiful song. It carries me back to our own yard in Woodburn, Oregon, where I could well be hearing a yellow or MacGillivray's warbler singing from the

upper limbs of our English walnut trees.

About noon one day, Bob stopped me and said, "Listen, Fred, I hear a Baltimore oriole." (He is from New Jersey, you know.) As I am not too familiar even with Oregon's Bullock oriole, I said, "Are you sure?"

"Yes, let's find it," he said. So off he went in the direction of the song, and there on the lower limbs of a banyan tree was a black-headed oriole, resplendent in its orange and black dress! I will have to hand it to Bob—he called that one right on the nose.

The afternoons were usually of just the right warmth to make one lazy, so Bob would sleep in the tent, and I would wander off to some warm, grassy clearing among the groves and sunbathe; watch the many beautiful butterflies flit here and there; or lie on my back and watch puffy cumulus clouds drift by overhead—and just dream.

Then in the evening, as soon as it was quiet, the jackals would begin to drift in to scavenge the theater and camp area for whatever food they could find. Bob, Ernie, and I spent many hours watching their ghostly forms move about in the moonlight. And you haven't lived until you have heard a single jackal give his laughing *yaw-yaw-yaw* howl, which "sets off" all the jackals in the area, until the woods and fields on all sides of you are filled by the voluminous and eerie calls of the night, where, but a moment before, had been peaceful silence and moonlight.

It was funny to see us out there, standing still, just watching and waiting. We set a ten-minute limit on staying out in the cold night air (wintertime, you know), but we always extended it another five or ten minutes until we either heard the jackals, or were just too tired to stay up any longer! It was a lot of fun, though.

The moment Bob and I stepped across the fence into the jungle, we stepped into another world—one different from anything that we had ever been in before. It was not truly tropical jungle, but here were dense canopies of trees a hundred feet or more high, with thick tangles of lianas reaching from the ground up into the upper canopy. Vegetation on the ground was open in places, yet in other spots was a snarled mass of bushes and thorny vines. On the far side, the forest was deeply indented with pasture land and brush-filled areas. There were innumerable native pathways and one road through the jungle.

Bob and I went to the jungle almost every day, for we liked it out there the best of all—especially in the morning, for in the afternoon it was deathly still. Our first trip was one we won't soon forget. We flushed a black partridge as we first entered the brush. As we went into the denser growth the light grew dim, so we stood quietly and looked around. At frequent intervals, a plaintive and very delicate bird song came to our ears. It was the white-browed fantail-flycatcher (a pretty long name for such a small bird). It is a brown bird with a black head. The forehead and a line over the eye, spots on the shoulders, the tip, or distal, third of the tail feathers, and the underparts are all white. Whistler says:

"For liveliness and grace it is not to be surpassed. It is never still, and the whole livelong day it dances and pirouettes. Filled with an inimitable *joie-de-vivre*, it flits amongst the leafy boughs of giant mango trees with a short jerky flight, and where it settles, there it postures; it turns from side to side with restive, jerky movements; like a ballet dancer before her mirror, it tries new steps and attitudes; down drop the wings, up jerks the head, and all the time the dainty round fan of the tail is opened and closed and flirted with all the coquetry and grace of a beauty of Andalusia. Never was a bird better named; watch it for the first time, and within the first few seconds the name of fantail rises unbidden to the mind. Now and again the bird leaves the shelter of the branch and launches into the air, seeming to tumble, bent on suicide; a rapid snap at some tiny insect invisible to human eye, a swift recovery, and it has returned to the cool shelter of the leaves, and is once more bowing and dancing."

A little farther on Bob spotted a banana

tree twenty yards or so off the path, so I tramped down brush and crept under limbs to reach it—no bananas, and to make matters worse—there was a well-beaten path right up to the banana tree from another direction! What a let-down!

In a nearby tree we saw several old black-headed oriole nests in varying stages of deterioration. We guessed that there were four seasons' nestings represented there.

After making our circuit of the jungle we turned towards camp, when a bird flew by that neither of us had seen before. It was green above, and yellow-green below. The head and neck were a pale blue; the crown was red, with black and yellow lines above the eyes, and two red spots plainly visible on the lower throat, even from the distance at which we observed the bird. The blue-barbet was a brilliant sight, indeed, as it perched among the green foliage, its colors lit up by the sun.

As we passed through more dense growth we found several common green pigeons scratching like chickens on the ground. This particular spot seemed alive with birds as we passed through—fantail-flycatchers, Indian tree-pipits, golden-backed woodpeckers, red-whiskered and red-vented bulbuls, green parrakeets, and jungle babblers. We also saw one crow-pheasant, an all black bird, with coppery wings, over a foot and a half long. It resides in brushy areas where it feeds on the ground.

Just as we came out of the jungle to the pasture land bordering the camp, I spotted a lone jackal lying nonchalantly in the middle of the field! We watched it for awhile and then decided to walk up to it. We got within fifty feet or so before it left, and then it did not hurry; in fact, once it stopped and ate some grass. That jackal must have been pretty sick! Although jackals are supposed to be active at night, we saw them several times in the morning.

We tried to cover different parts of the jungle on different days, and the day we covered the side indented by brush and pasture proved worthwhile.

Various hawks, kites and vultures were there; the red-whiskered and red-vented bulbuls were the commonest birds. Natives working in nearby rice paddies did not disturb yellow wagtails, little egrets, or the common snipes that were in the paddies, too. We even came upon the odd-looking hoopoe as it was feeding on the ground. Our first Indian robins were plentiful in this area, as were Indian ring-doves and rufous turtle-doves.

As we turned back into the jungle, we heard a raucous, scolding jaylike call, and then a very soft and melodious song, which, in parts, reminded me of our own western meadowlark. After a great deal of breaking brush and searching diligently we found the source in a treetop, way off the trail—it was the usually quiet and shy Indian tree-pie!

The paths through the jungle were used often by the natives, and as they passed, they would turn around and watch us with suspicion, or curiosity (I do not know which). Once in awhile we would look behind us as we went along some path, and there would be a native peeking around at us from the last bend in the path.

In our wandering through the jungle we found different types of animal traps which the Indians had constructed. Most of them were snare traps, and there were also a couple of box traps and one kill-fall trap. The strange part of it was that we never saw a trap with a catch in it!

The day before we shipped out I had 119 species on my list, and I was determined to make it an even number—120, before I left that camp. I went to a small grove not far from the tent area, and in a few minutes I was treated to a real beauty. I sat down within seven feet of a Tickell's golden-backed woodpecker, and watched it busily engaged in tearing a rotten tree stump to pieces. It varied from the regular golden-back in having a network of black lines on the white chest instead of black spots, and in having a red, rather than a black, rump. I was really thrilled to be so close to this large and colorful woodpecker, but after about ten minutes I hated not to have it know that I was there, so I cleared my throat. It stopped momentarily and then

continued. Then I moved my hand to my face and it hopped to the stump top, but still did not fly. I stood up and its red crest jerked erect, then it flew to a tree only fifteen feet away. I stood watching it "hike" its way up the tree trunk. Now, who could ask for a greater thrill in bird watching than that?

The above incident was a fitting climax to the enjoyable (that is, as long as we had to be overseas, and could not do anything about it) weeks we spent at this camp. Ernie, Bob, and I shipped out the following day: Ernie went into China, Bob and I stayed in India. Later Bob was transferred to a station over the hump in China.

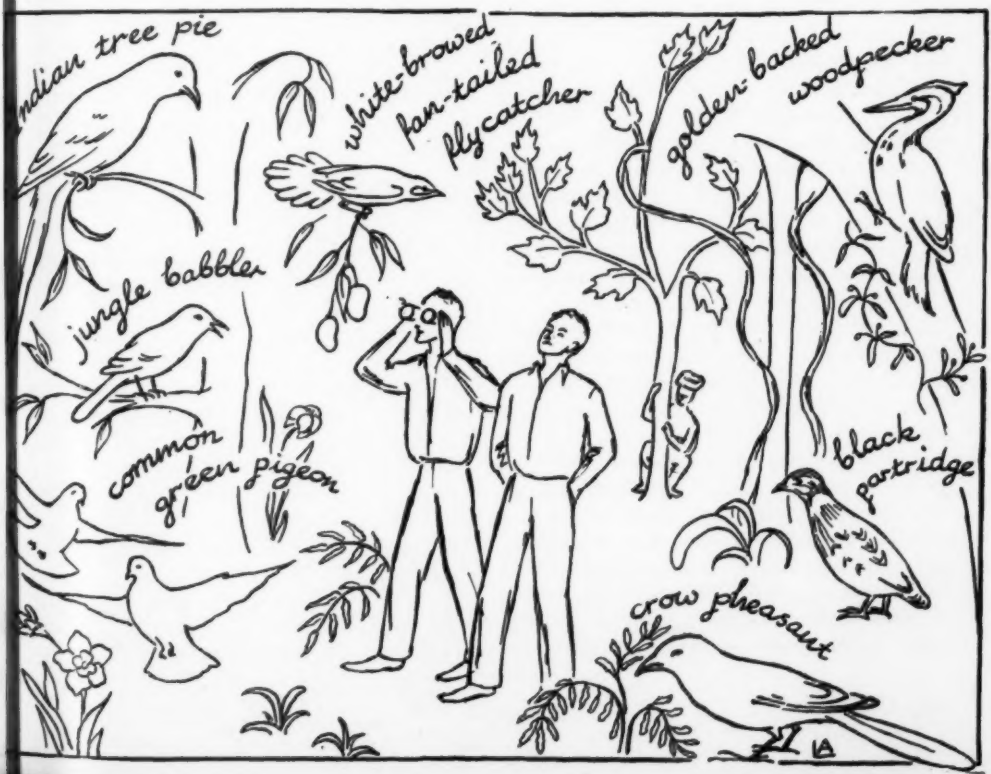
It is a small world, with all of us speaking in terms of countries and continents; only a few short years ago our sphere of living was confined to counties and states!

On July 2, I was sleeping at ten in the morning, after working the graveyard shift (just as I had all of the past six months in Shamshernagar, Assam), when our NCO roused me to say that two of us could go to rest camp that very day. When I heard that I woke up in a hurry!

We missed the special train that was made up in Calcutta, but later took a plane to Agra. As my good fortune runs (occasionally), there was no train to the rest camp for three days. That was three days we were forced (?) to spend in Agra, site of the world-renowned Taj Mahal.

We arrived in Agra at night. The next morning I saw a pair of mynahs perched on one of the ropes of my tent. When I woke a little more it dawned on me that these birds had red wattles, rather than yellow ones. They were bank mynahs, a bird that closely resembles the common mynah.

"Whitey" (Jack M. Whited, of Shreveport, Louisiana) and I made haste to go into Agra, where we hired a tonga (a two-wheel horse-drawn vehicle) and proceeded to the Taj Mahal. It is a beautiful sight, but after I had seen it once, I had no desire to see it again. Perhaps it is just me, but I do not seem to have the appreciation



of man-made things that I have for those of nature. Why I would trade a hundred visits to the Taj Mahal for the scene I had at sunrise one morning in late June, 1940, as I stood on Glacier Point and viewed Half Dome and its backdrop of snowy peaks in Yosemite National Park! Even a small azure lake set in the verdant green of the Cascade Mountains is marvel and pleasure enough for me.

At the edge of the much photographed pools in front of the Taj was a large pied wagtail. In the trees and shrubbery of the gardens were green parrakeets, mynahs, bulbuls, tailor-birds, house crows, drongos, and even a few chipmunks. I stepped off the walk into the shrubbery to take an off-center picture of the Taj Mahal and was surprised to find myself almost within arm's reach of that ever-interesting bird, the hoopoe.

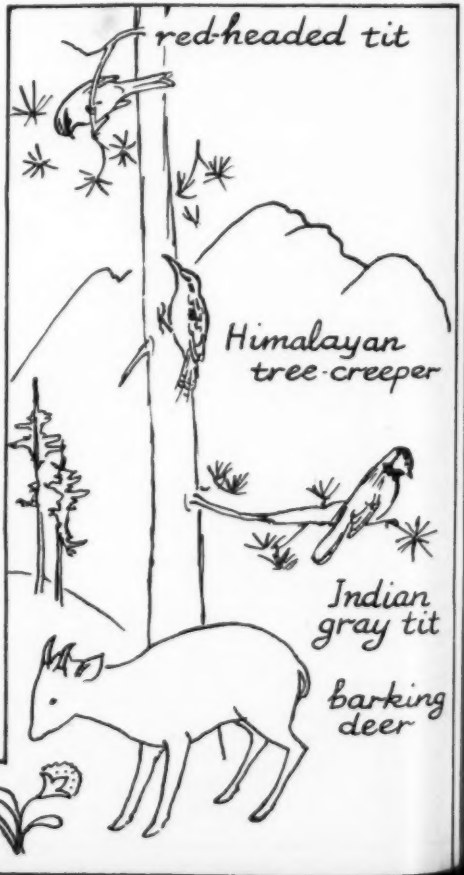
Back at camp, the afternoons were exceedingly hot, so I spent my time at the base swimming pool—a very nice spot to be, with shade trees, and a green lawn right up to the white picket fence around the pool. While swimming I could see green bee-eaters and jungle babblers in the trees, and neophrons and jungle crows flying overhead.

Every morning, while it was cool, I would go for a hike near the base. One morning I saw a native sprinkling some sort of meal on the ground, where an ant colony was located. Later, I learned that he was a *Jain*, a member of the same religious group that has the ornate temple in Calcutta. These people do not believe in harming even the tiniest creature—they walk with their eyes on the ground, so as not to step on any animal; and often a cloth is held in the mouth to avoid swallowing any insects.

In the evenings we would write letters or perhaps go to a show. One evening we were stretched out on the lawn at the Red Cross Club, when a few green parrakeets flew into the trees. They were followed by more and more, until there was a continuous flight of birds coming in a "bee-line" to this grove of trees from across the open plains. We watched for almost an hour and a half. Surely several thousand birds had come in to roost before the flight tapered off to a few stragglers as the light faded.

Our train left the following afternoon with four of us to a compartment. The train trip north from Agra was much like our first trip across India: a mixture of Indian kids and beggars, and water birds in the irrigated areas near the railroad. Red-wattled lapwings, white-necked storks, and white ibis and egrets were plentiful. The most interesting of the water birds was the Sarus crane. It is somewhat like the sandhill crane of North America. A magnificent gray bird, its head and neck are reddish and the body is graced with whitish plumes. I had a brief view of several of them doing a "crane dance."

That evening, just at dusk, we had a lengthy stop at Kasganj. A twelve-year



old Anglo-Indian girl, with a little brother on one side and a little sister on the other, visited with us. She was educated in an English school. Primarily, she wanted United States postage stamps, but that was not all—she wanted the answers to a long string of questions. One was: "Can you sing the top songs on the Hit Parade?" It is a small world, indeed!

We came to the end of the train line at seven in the morning. At nine we loaded into Indian civilian busses. We made a three and a half hour trip of fifty-three miles from the railway to Ranikhet rest camp. Imagine a paved road, one-and-a-half lanes wide, hugging steep mountain ridges on one side, and dropping a couple of thousand feet to a river canyon on the other side! In the fifty-three miles we crossed a 5200 foot ridge, then dropped down to 1500 feet, up again to 4700 feet, then down to 3500 feet, and finally climbed to Ranikhet at 6100 feet. It was bad enough having a crooked road, let alone having to pass several convoys of twenty or thirty Indian army driver-school trucks. We had to hug the edge of the road more than once.

The way the scenery was below the first ridge I decided that I was going to have two weeks in a bird-lover's heaven. There were rushing streams and quiet brooks with rugged moss-covered rocks and canyons; there were open hills and brush-land and dense tangles of jungle vines and trees. But, as we progressed northward and upward, we entered areas of almost semi-arid vegetation, represented by *opuntia* and *aguava,* but when we reached the tops of the ridges there were open forests of pine. Occasional bands of fifteen or twenty large black-faced langur monkeys attracted our attention at the edge of the road. Young were hanging from the underside of some individuals.

The rest camp at Ranikhet is situated on the uppermost points of a 6000 foot ridge of mountains, with deep valleys dropping down from all sides. The site affords a beautiful view of a range of 25,000 foot snow-capped peaks north of the camp. Nanda Devi is the highest of those peaks.

The weather during our stay was poor. Invariably when I was several miles out of camp, up on another ridge, or down in a deep canyon, I would get caught in a downpour. Most of the time the clouds were over the valleys below us, but when they rolled up to our camp level, visibility was cut to zero.

No matter how far off the "beaten path" I was, I would come across whole Indian families cutting and gathering grasses on the mountainsides. I suppose they used the grass as hay for their cattle. On the way back from one of these trips I rounded a bend in the trail and just caught a glimpse of a panther as it headed into some brush below me. Another time I found myself in the midst of a flock of several hundred Indian gray tits, green-backed tits, red-headed tits, and Himalayan creepers, as they roved through a brush-covered hillside. That reminded me of winter hikes at home when I came upon roving flocks of chickadees, kinglets, and bush tits.

One evening, as I strolled along a trail a few hundred feet below the Red Cross Club, I saw two odd-looking animals grazing on the grassy hillside below me. I hid behind a pine tree and watched them for sometime before I decided that they were barking deer. I had heard them "barking" during the moonlight nights, but before this I had no idea what they looked like.

"Whitey" and I made a few extra trips away from the camp. One was to the government gardens at Chaubattia, (a town on a higher ridge of mountains seven miles away). These gardens are really an agricultural experiment station. Captain J. G. Burns, an Englishman, is the superintendent. This station is located near the top of the ridge at 6500 feet, and has a western exposure. The primary purpose is to experiment with fruit varieties and the control of diseases detrimental to them. I was astounded at the fruits (and the many varieties of each) growing there: cherries, apricots, peaches, plums, prunes, pears, apples, quince, blackberries, rasp-

berries, strawberries, mulberries, rhubarb, figs, chestnuts, and walnuts.

Captain Burns also has a flower garden that made me think of mother's garden in Woodburn. There were primroses, azaleas, snapdragons, dahlias, gladiolas, geraniums, fuchsias, hibiscus, hydrangeas, spirea, gardenia, iris, canna lilies, daisies, many varieties of roses, and dozens of other flowers that were familiar to me.

During our tour I caught a glimpse of a bird that instantly brought to mind the mountain bluebird back home. Upon closer inspection I found it to be a verditer flycatcher.

We took a one-day trip to Naini Tal, a lake resort at about the same elevation as Ranikhet. It was two-thirds the way back down the road from camp. Anyone with a weak heart should never make the trip. We went by GI truck—or maybe it was by GI airplane—I am not sure yet! Believe me, all other traffic took to the shoulders when they saw us coming. Where it took three-and-a half hours to make the trip by Indian bus, we did it in two hours, flat! Even though we nearly flew on that trip, I did have a chance to see a few new birds, among them the Himalayan pied kingfisher, and the brown dipper. Both are similar to Oregon's dipper and belted kingfisher. The large langur monkeys were seen many times along the way.

The last ten miles is uphill, until all at once the road comes up to the lower end of a picturesque valley, and there is Lake Naini Tal at the level of the road. Hotels, cottages, homes and business district are built around the lake.

In the afternoon we rented a sculling boat and made a circle of the lake, for it was not very large One bird of particular interest was the Brahminy kite. According to the authorities, it is not found at elevations that high. Just before we came off the lake, I saw a golden eagle. (I am quite positive, but would not swear to it.)

I met another weatherman who came to India with me, Melvin House, of Wilkinsburg, Pa. We decided to take a trip to Almora, 2000 feet lower than Ranikhet, a small town at the end of the road, not far from the borders of Tibet and Nepal. We went by civilian bus over a very poor road, but the miles and miles of wild pyracantha in full-berry, made it a pleasant trip. The orange-red of the pyracantha made a nice color contrast to the green, terraced hillsides above the Kosi River. At one place we saw a hillside of solid spruce forest, which happened to be the only concentration of that species that I saw in the whole area.

The town, itself, was a complete surprise to us. It was entirely native, with the exception of two English families, and an American mission. It was the first town I had been in that was not "rebuilt for Americans." The shops all sold native goods; the buildings were of Indian architecture, the streets of cobblestones. Another thing of interest was the Mongolian or Tibetan strains in the people of Almora.

Our fifteen days at rest camp over, we flew back to Calcutta and then to our base at Shamshernagar. It makes a pretty small world when you can fly half way across India in a morning, and go from 6000 feet in the remote Himalayas to the rice paddy country of lower Assam in just twenty-four hours.

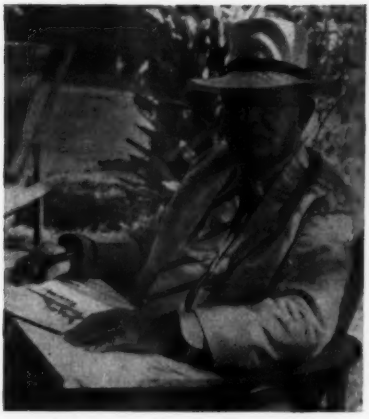
A fitting climax to the last lap of our return trip occurred when the ship we were in flew through a "cylinder" of several dozen white-backed vultures that were circling on a convective air current at three thousand feet. Fortunately we did not collide with any of the birds. There had been occasions where vultures caused serious damage to our aircraft in India and Burma.

Taking an optimistic view, it seems that I will not have many more opportunities for travel until that day comes when we board a ship headed for the United States. That will mean the Northwest—Oregon and Washington, and the people and things that I love.

I will admit this has been a wonderful experience and I am sure that I will never forget a bit of it. *But*—I could very well have done without it. Give me the Pacific Coast—forevermore!

An Assemblage of Friends Pay Tribute to

Frank Michler Chapman



A MEMORIAL MEETING for Dr. Chapman was held at the American Museum of Natural History in New York City on April 24, 1946. Robert Cushman Murphy, Chairman of the Department of Birds at the Museum and honorary president of the National Audubon Society, presided. Addresses were given by Dr. Leonard C. Sanford, a Trustee of the Museum; Guy Emerson, Elsie Naumburg, John Kieran (on the board of directors of the National Audubon Society); Dr. Herbert J. Spinden, of the Brooklyn Museum, Peter Scott, English bird painter and Frederic C. Walcott, world traveler and conservationist.

Dr. Chapman's daughter-in-law, Gladys Swarthout Chapman, sang "The Lord's Prayer."

FRANK M. CHAPMAN (1864-1945)

Excerpts from Address by Dr. R. C. Murphy

DR. Frank M. Chapman died last November. It has seemed to his friends that the period of spring would be the most appropriate season in which to honor the memory of a man who was always associated with striking and impressive phenomena of the rebirth of the year.

The first idea that I want to suggest is that, however much we mourn the loss of Dr. Chapman, this is not to be regarded as a sad occasion. I recall the memorial services held at Cornell University for Louis Agassiz Fuertes, one of the most intimate friends that Dr. Chapman ever had. His death in an accident was undoubtedly as severe a blow as Dr. Chapman ever suffered. Yet the great heart, the cheerfulness, whimsicality and irrepressible sense of humor characteristic of Fuertes won out in a most extraordinary manner over the sorrow of the comrades who had assembled to think of him. The joy and fun, with which Fuertes bubbled in life, survived to rob the occasion of much of its tragedy. In spite of his own loss, Dr. Chapman always remembered that memorial meeting as a most exalting experience.

If Fuertes, whose life ended at middle age, could spread such a benison over the host that remembered him, surely Dr. Chapman, who lived happily and constructively to the age of 81, carrying his research and writing to within six weeks of the close of his life, should leave us the same kind of memory. Therefore, I hope that I reflect the sentiments of all who are present this afternoon when I state that this is not a sad gathering but is, on the contrary, a triumphant assemblage of friends, proud of their relationship with Dr. Chapman, eager to emulate his example as a man and a naturalist, and determined to do all possible to further the love and understanding, and beneficent use, of the outdoor world, all of which he encouraged to perhaps a greater degree than any other individual of his generation.

. . . To Dr. Chapman the life of an or-

nithologist was a life of many strands, even though they all focused on a single point. He was not only systematist, biologist, maker and curator of a great study collection of birds. He was also a conservationist, an educator who appealed alike to youth and to age, an explorer throughout wide reaches of the still relatively primitive world.

For most of his active career, Dr. Chapman took a leading part in the educational and legislative movement which led, as early as 1886, to the creation of the first Audubon Society. For several decades he was a member of the board of directors of the National Audubon Society, and he was the founder and for forty years editor of *Bird-Lore*, which has now become *Audubon Magazine*, and which soon acquired a circulation greater than that of all other ornithological magazines combined.

. . . Dr. Chapman had a notably reserved temperament, which broke down only under peculiarly congenial circumstances. Only his intimate friends really knew the depths of his kindliness and sympathy.

It is very interesting that this side of his nature was most apt to come to the surface when he met for the first time some young person, a little timid perhaps, and not quite sure of himself or herself. I have, for example, a treasured memory of my own first meeting with him in September, 1906, when beside his desk in the old North Wing of this museum, I tried somewhat haltingly to tell him of my own interest in ornithology. His approval and encouragement soon put me at ease, and the result was that I spent the next year with him before going to college. . . .

THE PIONEER IN BIRD-LORE

By Guy Emerson

IN the early part of April of this year I spent a few days in the Everglades and around the Florida keys. Ten years ago I made the same trip. Then there were very few great white herons, fewer roseate spoonbills and no reddish egrets. Now the noble great whites have increased notably, from about 60 birds to nearer 600. Spoonbills are nesting successfully in a number of places. Reddish egrets are on a dozen keys.

This is due to protection, largely implemented by the National Audubon Society, through persistent education and warden service, along the Gulf Coast of Texas and in Florida, itself. Government agencies have helped; but the initiation of this effort calls for a salute to the Audubon Society, with which Frank Chapman was intimately associated since its beginning.

This success in bringing back strikingly beautiful birds is a specific example of the kind of conservation work which Chapman helped to set in motion.

In the field of conservation in its wider sense, involving the protection of our environment as a whole, its trees, soil, streams and all living things, Frank Chapman made no claim to be expert. He became soundly grounded in the whole field; but his main interest was in birds. His was a deep and consuming interest. It led him to give up a promising banking career and to enter a life work which then had little standing with his friends or with the American public.

In those days the majority of ornithologists collected birds and their eggs almost as a matter of course. The scientist and field naturalist had little regard, and often considerable disregard, for the field-glass bird man. Chapman was a bridge between the era of collection and classification, and the modern era in which millions have had their eyes and minds and hearts opened to the beauty and interest and companionship which birds can give.

Perhaps he never quite crossed that bridge. To the end of his life he was, in spirit at least, a collector and a hunter, as well as a bird-lover. I should like to dwell for a moment on the implications of this fact.

Perhaps we have not quite thought

through the philosophy of the nature lover. Most of us have, first of all, a basic feeling for nature, because our outdoor environment is the very body of our existence as human beings. We are organic with nature, stuff of its stuff. Yet, as has been said, man marches along the path of civilization with an axe in one hand and a gun in the other, cutting down everything that grows, killing everything that lives.

Our ethics is a little confused. Those who want to preserve nature are often moved by extremes of emotion. Many bird-lovers feel that it is morally wrong to kill birds for collections, or ducks and geese and quail for the table, yet they consume with gusto domestic fowl. Perhaps a domestic duck dislikes being killed as much as does a wild mallard.

One great section of the human race has at least adopted a consistent attitude in this regard. Millions in India will eat no animal food, and consider it ethically wrong to kill even the cobra or the man-eating tiger.

But the founder of the Christian religion saw no harm in a feast of fishes. The Audubon Society has never opposed the right of man to kill for food; nor has it opposed the reasonable collecting of birds in order that their classification and place in nature may be better understood.

It is, after all, a question of degree. Some of Dr. Chapman's best research, as at Barro Colorado, was done through observation of the living bird, with no collecting of specimens. His writings reveal an artist's instinct for the beauty of birds and their music. But he was realistic enough to believe that a million and a half duck-hunters who obey the hunting regulations are not, even in a slight degree, ethically wrong. And he knew that there would be few serious bird watchers or bird students if a long line of scientists, starting with Audubon himself, had not named and classified, on the basis of the bird in hand.

But the conservationist must always be alert because the sportsman in his enthusiasm tends to forget that most of our 140,000,000 people love to look at their wild ducks, rather than eat them. And professional ornithologists need to be reminded that even the rare birds belong to all the people and are not to be shot for every new museum or collection that appears on the scene. Reminders and restraints will always be needed to preserve this lovely heritage of America for the delight of future generations.

The love that Chapman had for birds, his articulateness, through his lectures, his writings and his constant face to face inspiration of hundreds of individuals, did much to start a movement which has led millions to a wider appreciation of the out-of-doors. In an age of over-emphasis upon the mechanical and the artificial, love of birds has influenced countless men and women toward appreciation not only of birds but also of the integration of nature as a balanced whole, and of nature's essential relation to man.

Chapman was a great ornithologist—but he was something more—a charming, warm-hearted and proportioned human being. He loved birds. He loved them as Audubon loved them. He also loved them as St. Francis loved them.

We can be eternally grateful for what Frank Chapman achieved, and for what he was. As a result of his life and work, America is, and is likely to remain, a better place to live in.

FRANK M. CHAPMAN—THE TEACHER

By Elsie M. B. Naumburg

I REMEMBER just as clearly as though it were yesterday meeting Dr. Chapman, thirty years ago. He asked me to come to his office where he was seated surrounded by specimens.

I was to come as a volunteer and show what I could do, and I must confess I felt a bit scared. On the day of my arrival at the Museum everyone was very pleasant and pleasantly reserved, wondering I am

sure, what a woman ornithologist was up to, and Dr. Chapman merely said, "Good morning, Madam." However, he was a kind and helpful teacher at once and soon started to speak with me about his plan to write a book on the birds of Ecuador and one on the birds of Peru. How well I recall his asking me to identify all the birds from Ecuador in the study collection, and when, after the beginning of World War I, he wrote me from Washington, asking me to identify the birds of Peru—I got my real start, plus a salary paid out of the Peruvian Fund.

It seems fitting to recall at this time how much Dr. Chapman meant to each one of us of the Bird Department. He was always keenly aware of what was good for us, of what we needed in order to progress. He had great leadership and foresight and when his confidence had been gained, he was a loyal and true friend and adviser. He was always planning for our future and even while we were working on some specific problem with feverish interest, he was proceeding with other plans for us.

And so it was that Dr. Chapman asked me to write the "Birds of Matto Grosso, Brazil," based on a collection made by the late President Theodore Roosevelt. It was with Dr. Chapman's permission that I took some fifteen hundred birds from this collection abroad and visited the British Museum and Tring, Munich and Vienna in order to do some intensive research and thus prepare myself for writing the book. Frequently, at the various borders of the continent I would see my train pulling out without me while custom officials tried to figure out whether I was a milliner, in spite of all my credentials and gold seals.

Dr. Chapman always had his pattern blocked out. His ideas ripened into plans, his plans into framework, his framework into a growing structure. Therefore, his great foresight plus his magnificent accomplishments resulted in the greatness of his achievement. We, who survive, have a responsibility to carry out his plans and to continue the work so that his planning and building will not have been in vain.

THE INSPIRATION OF DR. CHAPMAN

By John Kieran

I WISH to register quite simply and most sincerely my personal debt to the late Dr. Frank M. Chapman. Thoreau in his chapter on reading in "Walden" had this sentence: "How many a man has dated a new era in his life from the reading of a book." It certainly began a new era in my life when I first opened Dr. Chapman's "Handbook of Birds of Eastern North America." I have since gathered by gift or purchase many books about birds, some of them larger and more expensive than Dr. Chapman's "Handbook," but I still treasure the tattered "Handbook" that opened my eyes to the wonders of bird life around us. The covers are loose and the pages are frayed from constant thumbing over many years, but I still look upon it with affection and gratitude.

What stirred me most was the way in which Dr. Chapman linked science and artistry in his descriptions of birds and their haunts and habits. Every feather was noted and every measurement was given with all due scientific exactitude, but the general text was delightfully flavored with the wide knowledge and the deep enthusiasm that Dr. Chapman had in the field that he knew so well and loved so long. The enthusiasm was such that it sparkled through the printed words and inspired me to go out in search of the stirring sights and interesting experiences that the author practically guaranteed to a faithful student of bird life. So it was that in a very amateurish fashion I began the study of birds under the inspiration of Dr. Chapman's "Handbook," and so it is that I owe him a lifelong debt of gratitude for the great enjoyment it has brought to me. When I think of how many other readers owe a similar debt to Frank M. Chapman, and how his influence is bound to continue for many years to come, it is plain that he has reared a monument more lasting than brass. His work remains his imperishable monument.

THE PRESIDENT'S *Report to You*

IT'S not news to you to hear that it is important that the Fish and Wildlife Service be consulted during the project planning stage by other federal agencies, particularly the Reclamation Bureau and the U. S. Engineers, so that possible adverse effects upon wildlife resources be avoided or minimized, and helpful features included to enhance the value from a wildlife conservation standpoint. There has been a so-called Coordination Act in effect since 1934, but it is greatly in need of strengthening in order to make it really effective.

It is news that H. R. 6097, which, at this writing, has just passed the House and now goes to the Senate, provides that whenever the waters of any stream or other body of water are authorized to be impounded, diverted or otherwise controlled, for any purpose whatever, by any department or agency of the United States, or by any public or private agency under federal permit, such department or agency first shall consult with the Fish and Wildlife Service and the head of the agency exercising administration over the wildlife resources of the state concerned.

It further provides that the reports of the Fish and Wildlife Service, and the state agency concerned, shall be made integral parts of any report submitted by any agency of the federal government responsible for engineering surveys and construction of such projects. Beyond that, adequate provision is to be made for the use of project areas for the conservation, maintenance and management of wildlife resources thereof and its habitat thereon. Significantly, there is a special section requiring the War Department to give full consideration and recognition to the needs of fish and other wildlife resources in navigable waters in the United States and to their habitat dependent on such waters. A section defining "Wildlife Resources" goes beyond habitual scope to include "all types of aquatic and land vegetation upon which wildlife is dependent." This is a desirable bill and should pass. You will make no mistake in so recommending to your senator.

WATER-POLLUTION CONTROL

Although many voices have been raised against the national sin of pollution of our waterways, progress in reform has been slow. Enforcement of the provisions of the Oil Pollution Act of 1924, covering the dumping of oil in coastal waters, has been largely notable for its absence. The struggle has been on for many years to establish some federal legal control of the disposal of industrial wastes and municipal sewage. At long last a compromise bill, but one with essential enforcement teeth in it, has been favorably reported upon by the Committee on Rivers and Harbors of the House. It bears the number H.R. 6024. Its Section 14 declares the deposit of any waste or substance in any form which is or may be injurious to human health or to any form of life, aquatic, bird or otherwise, or impairs in any manner the utility of waters for navigation purposes, excluding the normal discharge of motor boats, into any of the navigable waters of the United States, to be a public and common nuisance and provides that an action in equity may be brought by any United States attorney on request of the Surgeon General.

It provides for a six months' period for

discontinuance of a nuisance originating after the passage of the legislation, and for a two-year moratorium after the date of enactment with regard to nuisances originating prior thereto. On appeal, a water-pollution advisory board may extend this moratorium period to a term not in excess of five years. The need for a national water policy has long been publicized by conservation agencies throughout the country. Due credit should be given to the Izaak Walton League of America and Congressman Mundt for the leading parts they have taken in the promotion of this desirable legislation. H.R. 6024 should pass, and warrants your full support. Your senator and congressman will be glad to hear from you to that effect.

NATIONAL SCIENCE FOUNDATION

The recent war brought into public focus the relatively great importance of science in all matters of world welfare and the consequent vital need of the federal government's stimulating in peacetime far greater volume of scientific research than has normally heretofore prevailed. This has led to the introduction in Congress of bills to establish a National Science Foundation. Conflicting views represented in the Kilgore and Magnuson bills have been compromised in S. 1850 which has been favorably reported to the Senate by the Senate Committee on Military Affairs.

It provides for the support of scientific research and development to enable young men and women of ability to receive scientific training; for promotion of the conservation and use of the natural resources of the nation; for the correlation of the scientific research and development programs of the several government agencies; for the achievement of a full dissemination of scientific and technical information to the public; and the fostering of the interchange of scientific and technical information in this country and abroad.

The issue over whether the foundation should be run by one administrator or by a board of trustees has been to a degree resolved in S. 1850 by providing for an administrator who shall consult and advise with a National Science Board.

The issue over whether the originators of ideas would retain patent rights, or their ideas become government property and free, without restriction, for public use, has been to a degree resolved in S. 1850 by providing for freedom of such public use except that the head of any government agency, financing by contract or otherwise administering federally financed research and development activities, may provide for the retention by the inventor of patent rights based on discoveries, inventions or findings produced in the course of such research and development.

There is the additional proviso, however, that such grant of patent rights shall not invalidate irrevocable non-exclusive royalty-free license for governmental purposes of the United States. The issue over whether the social sciences be specifically excluded from support of the new agency has been to a degree resolved through provision to assure that all social studies supported by the Foundation are, in fact, scientific in character.

In spite of the fact that S. 1850 is opposed by quite a few leading American scientists, it would appear to represent as satisfactory a compromise of conflicting views as can be contrived at this stage, and the overall importance of federal stimulation of scientific research would seem to warrant support of passage of this bill at this session of Congress.

NOMINATING COMMITTEE

We are grateful to Mrs. Robert C. Wright of Pennsylvania, Mrs. O. M. Stultz of California and Mr. Walter Elwood of New York for their help in the past several years as members of the official Nominating Committee to recommend a slate of directors for consideration at the Annual Members Meeting in October. You will be glad to learn that they have, by unanimous request of the directors of the Society, been asked to again so serve this year and have graciously accepted. Should you have any particular recommendation to submit to the Commit-

By Allan D. Cruickshank

Waterfowl expose themselves to heavy kill at sunset.

tee for consideration, you should address it to Mrs. Wright at Haverford, Pennsylvania. It is the right of any member of the Society to make additional nominations from the floor at the time of the Annual Meeting. An effort will be made to publish the list of official nominees in the July-August issue of the magazine.

IN DEFENSE OF WATERFOWL

The recommendation of your Society with regard to waterfowl hunting regulations was, we are happy to say, extremely well received by the press of this country. With few exceptions the comment stressed the decrease of supply and the increase of demand, and recognized the need of substantial restriction of privileges if an adequate breeding stock is to be maintained.

It would appear that the stage is pretty well set on a nation-wide basis for majority support of appropriate restrictive action by the federal government, whose officials we have confidence may be counted upon to act with the courage of their convictions. In addition to the matters referred to in our communication to all members and the press, namely, recommended shortening of

White ibis by Roger Tory Peterson

the season from 80 to 30 days, cutting of the bag limit from 10 to 5 and the making of the possession limit identical with the bag limit, we have ventured to recommend to the federal government restoration of the 4:00 P.M. closing time instead of sunset; this because the habits of the waterfowl, generally speaking, are such that they expose themselves to heavy kill at dusk and the legalizing of shooting up to sunset increases the difficulties of enforcement by facilitating illegal after-dark shooting.

We have also ventured to recommend that, in view of the declining population figures on wood duck during the few years in which it has been legal to take one a day during the open season, the season be entirely closed on wood duck this year, except in those few southeastern states in which it is still common.

NO GRAZING ON THE RAINEY

For quite a few years your Society has had a grazing problem on its Louisiana marshes. The Board voted in 1935 to discontinue grazing permits there, having in mind both the interference of cattle with various forms of wildlife and the effect of their trespass on erosion, particularly on the Gulf beach ridge and on the canal banks. Because of the intrusion into our area of certain small parcels of privately owned property, the prevailing open range regulations in that community, and the difficulties attendant upon the construction and maintenance of fences, it is only now that an amicable agreement has been finally arrived at with the private landowners such that their trespassing cattle will be entirely withdrawn from the Rainey Sanctuary lands by June 1st, and that the Society will erect and maintain some three miles of fence designed to prevent further such trespass. You will want to know that in pursuing this non-grazing permit policy on this sanctuary your Board has disapproved of the Society's accepting annual grazing fees of $2500, even though additional revenues are sorely needed to meet the costs of maintenance and improvement.

FLORIDA ROOKERY RESEARCH

Since the first of April, when Barnie Parker, we are sorry to tell you, resigned as a warden of the Society operating in southwestern Florida, Robert Allen, our research associate recently returned from some four years of war service, has been in the Whitewater Bay area, together with Charles Brookfield, who pinch-hitted as a warden for us at the head of Shark River earlier this spring.

They are carefully guarding the splendid East River rookery, and are making some current researches bearing upon such problems as the handling of visitors without disturbance to the rookery birds and the reasons, often obscure, as to abandonment of certain rookery sites. For instance, for the second time in three years the sizable white ibis rookery which formed at the head of Shark River was abandoned by the birds for no accountable reason. Apparently, but not surely, the bulk of these birds moved over to East River rookery and are nesting there. Discovery of the causes of such shifts by avian congregations would be of inestimable value to refuge managers.

And, by the way, the Governor of Florida has appointed a new Everglades National Park Commission and a party of some 25 persons identified with that Commission recently visited the Whitewater Bay area where our representatives, with the good boats "Audubon" and "White Ibis," and the aid of others with rented boats, acted as hosts and acquainted members of the Commission with the character of much of the private land which is yet to be acquired by the state for inclusion in the present refuge and ultimate park.

FLORIDA BIRDS INCREASE

When your Society began some ten years ago to have active warden patrols in Florida Bay, the great white heron population was down below 100. The reddish egret was not known to occur. The roseate spoonbill had been reduced to less than 50 and many other species of birds inhabiting the keys in the bay were far less common than they are today. Now, great whites can be seen sprinkled all over the area to the tune of not less than 500; reddish egrets have appeared and increased to over 100, nesting throughout the bay and the spoonbills, which have recently enjoyed several relatively good breeding seasons, can be seen to the number of more than 200.

As the federal Fish and Wildlife Service gradually takes over responsibility for protective patrols in this region, you are entitled to feel, we believe, that your Society has done a constructive piece of conservation work in Florida Bay during the past decade, and has again proved, if such proof be needed, that protection pays dividends in more birds. We shall continue, in accordance with our commitment to the Fish and Wildlife Service, to carry visitors by boat and station wagon on authorized visits or tours, to see at first hand the birds and other wildlife and the character of the conservation job carried on by the Fish and Wildlife Service.

Red fox pups by Walter J. Schoonmaker

NATURE HAS A WAY

Although not fully understood, we do know that various wildlife populations are cyclic. The numbers of foxes, for instance, build up to a peak, then begin to taper off. Now the state conservation departments are reporting a decline in foxes. In Michigan, for instance, in some untrapped areas, the foxes are 50 per cent under recent high levels; in other areas, where trappers have operated, the animals taken have been in poor condition. The policy of your Society, as expressed from time to time in our magazine, has been to urge consideration of the fact that nature has a rhythm and that man and foxes might live together more peacefully if we let nature have her way.

No doubt this same attitude, applied to sea lions, in California, would save wear and tear on man and seal alike. A recent report from that state recommends a 50 per cent reduction of the herds, because they are said to frighten away fish, tear nets and steal the fish from hooks and gill-nets. This is a perennial complaint, and the same point of view has been expressed by fishing interests with regard to cormorants, pelicans and other fish-eating birds. When such complaints are scientifically investigated, the amount of damage to man's seeming interest turns out to be negligible, if any, and frequently it can be demonstrated that the more abundant the predator, the more abundant the prey.

The charge this year is that sea lions have increased at a rapid rate because of the discontinuance during the past ten

years of the taking of these animals from Mexican waters for the dog-food industry. For a fuller discussion of this subject, let us refer you to an excellent article entitled "Sea-lion Slaughter" by Clinton G. Abbott, in the September-October 1939 issue of *Bird-Lore*.

APPROPRIATION CUT

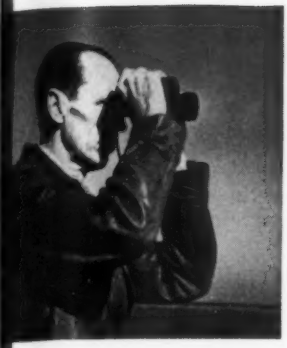
Just as this is written, the Appropriations Committee of the House has cut the Department of Interior budget roughly 50 per cent below the figure already approved by the Budget Bureau. It has been calculated that, up to this time, the Budget Bureau's approved appropriations of some $8 billion have been cut only $180 million by the House, yet the present action would cut the Interior Department's budget of $346 million by $172 million.

While we favor governmental economy and the elimination, or drastic reduction, of activities of wartime-created agencies, we feel that it is short-sighted and against the public interest to drastically cut operating expenditures of minor agencies of long standing, dealing primarily with the conservation of natural resources, such as the National Park Service.

Although the volume of visitors in the national parks is currently running some 87 per cent in excess of the previous year's experience, the action of the House Appropriations Committee would cut the expenditures in the Director's office 17 per cent, in the Regional offices 31 per cent and in the local maintenance of the national parks 28 per cent. This would have serious effect on the Service's ability to properly maintain facilities for public use, would tend to eliminate, among others, personnel engaged in overall planning and interpretation to the public of the features of the parks, such as the park naturalists.

Of the $32 million National Park Service budget, as approved by the Budget Bureau, 78 per cent, or some $25 million is for construction work and some $15 million of that for the Natchez Trace and Blue Ridge Parkways. Generally speaking, it does not seem to us important to restore cuts that have been made by the House Appropriations Committee as regards construction items, but it seems essential that the bulk of the cuts in the operating items be restored by action in the Senate. The action of the House Appropriations Committee appears to have been primarily political, with confidence that the Senate would assume responsibility for restoration of the bulk of the appropriations eliminated by the House. Final action will doubtless have been taken by the Congress before you read these lines.

Sea-lions by W. L. Walker



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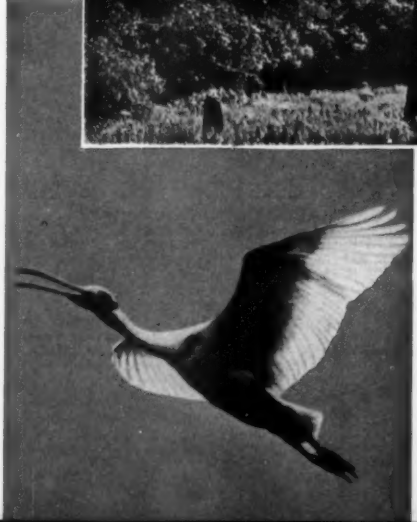

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The Changing Seasons

By Ludlow Griscom

THE ornithological winter proved to be a relatively eventful one in most parts of the United States. December was cold to very cold in the northern states with heavy snows; marshes and lakes froze up early, the ducks disappeared, the late fall migrants hurried South, and many sections complained of a general scarcity of birds, which grew progressively worse as the season advanced. Even Utah and northern California report a dry, cold winter, which was relatively dry even in southern California. Nearly ideal conditions prevailed in coastal Texas.

European cormorant—continued increase on Atlantic seaboard, with further southern records (southern Virginia and South Carolina).

Geese—good numbers throughout the country. Increase of brant on the Atlantic seaboard, but a decrease in southern California. An emperor goose in northern California.

Ducks—generally down in the northern states because of early cold weather. Reported greatly decreased from southern New Jersey, the Carolinas, Texas and California.

Goshawk—no flight anywhere.

Rough-legged hawk—no flight, in some numbers only in Ontario, Toledo, Ohio, and certain favored localities in the Atlantic seaboard states. Reported, however, from southern California.

Shore birds—greatly decreased on the coast of southern California.

White-winged gulls—a fair flight to coastal New England, with exceptional numbers of Kumlien's gulls. The glaucous gull now regular on the Great Lakes. The Iceland gull still very rare there, recorded from Ohio and Chicago.

The ivory gull reached Massachusetts; the California gull is reported from the coast of Texas, and a laughing gull near Los Angeles is the first record for the coast of California. The black-headed gull wintered in Massachusetts and near New York City.

Alcids—very poor numbers in New England. Numerous records, mostly dead birds on the beaches of Long Island and New Jersey. An Atlantic murre reached southern New Jersey.

Snowy owl—the greatest invasion from the Arctic in history. Abundant from the Atlantic seaboard to Michigan, south to South Carolina. In smaller numbers west to Minnesota and Iowa. In Michigan alone 618 were killed, plus 411 sight records!

Hawk owl—reported from Ontario and Quebec, and, most exceptionally south to southern New Hampshire and eastern Massachusetts.

Acadian chickadee—several birds reached eastern Massachusetts.

Red-breasted nuthatch—no marked flight this year.

Robin—invaded northwestern Florida and eastern Texas in great numbers; also southern California.

Hermit thrush—invaded southern California.

Mountain bluebird—invaded southern California.

Northern shrike—a flight year in New England south to Long Island. In the interior where it is much rarer, recorded from Ohio, Chicago, and Wisconsin.

Starling—has reached Oregon, and in hundreds in Utah for the first time.

Eastern evening grosbeak—greatest flight in history to the Atlantic seaboard, reaching Cape Cod, Nantucket, Virginia, North Carolina, Tennessee and Missouri. Supported almost entirely by feeding stations. Numerous wintering flocks of 75-150 birds. One such flock of 75 birds constantly present at a station in Connecticut was systematically trapped and banded, with the astonishing and unexpected result that over 600 different individuals were detected. One of the curious anomalies of the now regular visits of the evening grosbeak to the Atlantic States is that the birds get there without being recorded in the north central states. This year there were a few records from the Great Lakes area.

Pine grosbeak—small flight in New England south to southern New York.

Purple finch—exceptionally scarce in the Northeast; numerous in South Carolina and western Florida and flooding eastern Texas.

A notable number of white-tailed kites reported from southern California. A Harris' sparrow appeared at a feeding station at Haddam, Conn., and was photographed.

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Jan.-Feb.	**Fall Migration**
Mar.-Apr.	**Christmas Count**
May-June	**Winter Season**
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Sept.-Oct.	**Nesting Season**
Nov.-Dec.	**Breeding Bird Census**

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AUDUBON MAGAZINE'S TENTH BREEDING BIRD CENSUS
REPORTS DUE AUGUST 30

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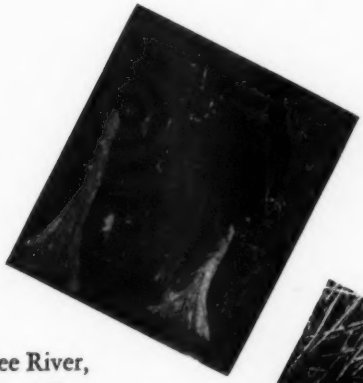
Our TENTH BREEDING-BIRD CENSUS will be printed in the November-December issue this year. Send for sheet of mimeographed instructions or refer to your *Audubon Magazine,* May-June 1944, pp. 187-189. It would be a great help if *all* census-takers would notify us as promptly as possible of their intention to participate in this project in 1946.

NATIONAL AUDUBON PRESENTS

ALLAN D. CRUICKSHANK

AND HIS NEW COLOR FILM

South along the Suwannee



Everybody has heard about the Suwannee River, but few people know much about it. Allan Cruickshank now brings to the lecture platform a vivid color story of outdoor life along the Suwannee. Tracing the river from its source in the land of the trembling earth, Okefinokee, Allan Cruickshank reveals its wealth of scenic beauty; pictures its alligators, birds, insects, flowers; captures its beauty in film as did Stephen Foster in song.

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Now we can offer you four new paintings which Roger Tory Peterson has added to his famous group. All the grace and beauty of our loveliest wild birds is caught in these wonderfully decorative and colorful prints.

Snowy egrets and flamingos (above). These two paintings make a handsome pair, although each is exquisitely decorative by itself. The whiteness of the egrets' feathers gleam against green water and the rosy-pink flamingos wade majestically in the mangrove shallows. 25" x 33".
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In a smaller size, you may have bluebirds (left) or sea swallows (right). Here is a charming family portrait of the well-loved bluebird among bright leaves as in your garden. If you know the graceful sea swallows (or arctic terns), you will want this picture of them darting across gray skies. 22" x 28". each $7.50

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Some of the most popular prints, beautifully reproduced and at a very reasonable price are listed here by their plate number. Any library will have a copy of Audubon's "Birds of America" for reference if you cannot recall the subjects.

PLATE 244	YELLOW-BREASTED CHAT	PLATE 200	COMMON CROSSBILL	20" x 26"
PLATE 47	RUBY-THROATED HUMMINGBIRD	PLATE 17	CAROLINA TURTLE DOVE	each $6.00

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